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Comments: On behalf of WildEarth Guardians, the Flathead-Lolo-Bitterroot Citizen Task Force, Friends of the Bitterroot, Friends of the Clearwater, Western Watersheds Project and Wilderness Watch, we respectfully submit the attached comments and enclosed exhibits in response to the Forest Service's notice of intent (NOI) to prepare an environmental impact statement to revise the 1986 Lolo National Forest land management plan (Forest Plan). 89 FR 6088.

[comment letter pasted below. See original document for footnote annotations]
Dear Revision Team,On behalf of WildEarth Guardians, the Flathead-Lolo-Bitterroot Citizen Task Force, Friends of the Bitterroot, Friends of the Clearwater, Western Watersheds Project and Wilderness Watch, we respectfully submit the following comment in response to the Forest Service's notice of intent (NOI) to prepare an environmental impact statement to revise the 1986 Lolo National Forest land management plan (Forest Plan). 89 FR 6088. The NOI explained the Forest Service is accepting comments through April 1, 2024 "concerning the preliminary need for change and the proposed action." Id. In addition to our comments below, we support and incorporate by reference the comments submitted separately by Wilderness Watch, and those by interested citizen and retired Forest Service official Claudia Narcisco.As a special note, the Forest Service needs to provide further clarity regarding its March 12, 2024 "Leader's Message" that stated the following:We are just past the half-way point of the comment period, which closes April 1, and have already received input that will help us refine our efforts in the next phase of plan revision. For example, we heard concerns that the desired recreation opportunity spectrum maps in the proposed action remove substantial amounts of existing winter motorized recreation opportunities. This was not our intent; the team and I took a closer look and discovered data processing errors. The intent was for the proposed action to approximately reflect the current condition of motorized and non-motorized recreation opportunities.1The message suggests that the Forest Service changed its proposed action as a result of its "errors," which would substantially affect our position on the desired recreation opportunity spectrum maps that included reasonable, but hardly sufficient, allocations for primitive and semi-primitive non-motorized settings. Such a change in the midst of the scoping period would preclude the public from providing meaningful input in violation of the National Environmental Policy Act (NEPA), especially given that the agency failed to provide a side-by-side comparison 1 See Ex. 1. displaying any changes resulting from the "errors." To comply with NEPA, the Forest Service must reissue its proposed action for public comments with detailed explanations and illustrations that explain and clearly show where corrections of its "data processing errors" changed the initial desired recreation opportunity spectrum maps.I. IntroductionWe appreciate the Forest Service's recognition that the Lolo National Forest (LNF) "plays a crucial role in providing habitat connectivity across western Montana between ecosystems and habitats for many species," including areas of connectivity "between three of the identified grizzly bear recovery ecosystems; the Northern Continental Divide Ecosystem, the Cabinet Yaak Ecosystem, and the Bitterroot Ecosystem." Preliminary Proposed Action (PA) at 8. The LNF also includes important habitat for a number of at-risk and sensitive species such as Canada lynx, wolverine, whitebark pine, bull trout, westslope cutthroat trout, mountain goat and more. The forest also contains crucial mature and old growth forests storing vast amounts of carbon that serve as part of a broader climate-crisis solution, in addition to providing necessary habitat for a range of species.Since its formation, the Forest Service has had the unenviable task of managing conflicting interests, and it is generally recognized that the agency's first chief forester, Gifford Pinchot, said that where conflicting interests must be reconciled the question shall always be answered from the standpoint of the greatest good of the greatest number in the long run. In the 21st century, the greatest good and best use of our national forest lands is to provide for non-extractive ecosystem services, in particular:
* Provisioning services, such as clean air and fresh water, and NOT energy, fuel, forage, fiber, and minerals;
* Regulating services, such as long term storage of carbon; climate regulation; water
* filtration, purification, and storage; soil stabilization; flood control; and disease regulation;

* Supporting services, such as pollination, seed dispersal, soil formation, and nutrient cycling; and
* Cultural services, such as educational, aesthetic, spiritual and cultural heritage values, and NOT high-impact and/or commercial recreational experiences, and tourism opportunities.

Certainly these services are at risk from the ongoing legacy of Forest Service mismanagement and exploitation that include logging, grazing, mining, high-impact recreation and the disruption of ecological disturbances such as those from wildfire, insects and disease. Exacerbating the environmental consequences of this legacy are the harmful effects of the climate crisis, which cannot be addressed through more mismanagement and exploitation. In fact, forest ecosystems evolved over millennia, often in tandem with traditional Tribal practices that did not exploit forest resources or result in the severe ecological degradation we see today. As the climate emergency continues to alter forest conditions, it is crucial that the Forest Service adopt a management theme of "Natural Adaptation and Assisted Recovery" that will allow the forest to slowly adapt to climate-altered conditions, and actively heal the scars left from decades of commercial exploitation. Such an approach will better provide for the forest's future ecological integrity than continuing a regime of active management that creates novel, engineered conditions that are experimental at best, and require massive commitments of funding and resources to maintain. Therefore, our comments emphasize the need for the Forest Service to prioritize the protection and restoration of ecological sustainability (36 CFR 219.8), and the diversity of plant and animal communities, (36 CFR 219.9), and the aforementioned ecosystem services (36 CFR 219.10).The Citizen PlanIn support of the above management direction, we provide (and urge the agency to adopt as part of a reasonable range of alternatives), the geographically applicable portions of "The Lolo-Bitterroot Partnership: A Citizen Plan For Fish, Wildlife & Forests." See Ex. 2, (hereafter, Citizen Plan). The Citizen Plan provides a broad framework for developing a specific alternative, and in some places provides specific management direction in regards to grizzly bear recovery, riparian habitat conservation, and the management of designated areas. In regards to other important issues, the Citizen Plan provides a more general framework that our comments below expand upon by including specific plan components to supplement the Citizen Plan. However, we stand ready to work with the Forest Service and the Plan Revision IDT to refine our suggested plan components if any are found to be unreasonable and cannot be carried forward in the Draft EIS. Where such a determination is made based on funding projections, we request the agency provide supporting budget analysis to demonstrate the cost-constraints.II. General Comments about the Planning ProcessThe Forest Service explained that its "proposed action was developed using the findings in the Revised Assessment (September 2023) and the Preliminary Need to Change." PA at 1. We provided detailed comments regarding the Draft Assessment (June, 2023), particularly in regards to the species of conservation concern. See Ex. 3. The Revised Assessment failed to address our comments, which we discuss below and throughout this letter. In addition we provide comments regarding the Need to Change document, and more generally in regards the agency's consideration of best scientific information and plan components.A. Preliminary Need to ChangeWe agree with several needs the Forests Service identified for changing its 1986 forest plan, even as we have concerns with others in its Preliminary Need to Change, Jan. 2024, (PNC). We offer the following observations to help the agency refine its needs for revision and better support a Natural Adaptation and Assisted Recovery theme.Grizzly BearWe support the Need to Change where it calls, "[f]or the plan to incorporate the latest grizzly bear management science and policy, and address the role that the Lolo National Forest plays in providing connectivity to the Bitterroot Ecosystem Expansion Area;" PNC at 15. Our groups have provided numerous scientific reports, papers and supporting GIS data that we urge the agency to utilize when determining how the LNF can provide habitat security and species protection within areas of connectivity to the Bitterroot Ecosystem. In addition, the Forest Service recognizes the need "[f]or plan content that reflects the road system impact on federally listed species." The Revised Plan must do much more than "reflect" the road system impacts, and actually minimizethose impacts. Further, there is a need to minimize impacts from all linear features that contribute to wildlife habitat fragmentation, increased erosion, loss of soil function, sedimentation and all the other harmful effects that degrade ecological integrity within the planning area. In other words, there is a need to minimize impacts from system roads and unauthorized roads (those not part of the transportation system such as user-created and any "undetermined" roads). In addition, other linear features include decommissioned roads that were abandoned instead of physically removed, remnants of temporary roads, firelines (which can be as wide as road), powerline corridors, and trails - especially those that receive high levels of use. In other words, the Forest Service must recognize

there is a need to minimize the harmful effects of these linear features beyond just system roads.InfrastructureWe do credit the agency for addressing some aspects of our concerns where it acknowledges that there is a need "[f]or the revised plan to provide guidance that supports a transportation system that provides reasonable access to National Forest lands for all users, minimizes environmental effects, incorporates different types of vehicles and purposes, and is within the fiscal capability of the unit." Id. at 18. However, the agency must navigate conflicting interests since providing reasonable access often does not equate to minimizing environmental effects, especially within the agency's fiscal capability. Here we urge the Forest Service to adopt a need that prioritizes minimizing environmental effects, and to establish clear standards, not just "guidance" that will meet this need.Mature & Old GrowthWe appreciate that the Forest Service recognized a need to "[e]nsure the plan supports implementing the emerging policy on mature and old growth forest, per Executive Order 14072, as appropriate." Id. at 11. We urge the agency to strengthen this statement and adopt a need to preserve and recruit old-growth stands as the forest naturally adapts to changing climate conditions, in order to "retain and enhance carbon storage" and "conserve biodiversity." E.O. 14072. This will require adopting a need to establish old growth recruitment and retention objectives, and standards requiring all projects to include a stand-level inventory of mature and old growth trees, and an elevated review to ensure projects are consistent with E.O. 14072. As it stands, the Forest Service has yet to list such a need, rather it states:To provide a sustainable conservation and management strategy for old growth and other late-successional forests which incorporate considerations such as wildlife habitat, carbon sequestration, and forest and landscape resilience to disturbances.PNC at 13. To be clear, there is a need to provide much more than a "strategy" but rather clear objectives, standards and guidelines that go beyond "considerations" and that actually maximize carbon storage and biodiversity.Soils & Soil BiotaThe Forest Service recognizes the importance of soils, including soil function, in several sections of the PNC, including the need:To provide plan direction for soil productivity and soil quality that maintains ecosystem functions (including carbon sequestration and nutrient cycling). This plan content should be clear, effective, ecologically based, and independent of management action; and soil monitoring should better capture known issues and conditions such as landslide-prone areas and alluvial fans.PNC at 15. We encourage the agency to specify that the plan content must include standards and guidelines to meet this need, and provide a specific need to protect and restore soil biota, especially mycorrhizae and common mycorrhizal networks, which we discuss further in these comments.WildfireThe wildfire issue is subsuming Forest Service management as reflected in its 10-year strategy called "Confronting the Wildfire Crisis: A Strategy for Protecting Communities and Improving Resilience in America's Forests."2 We recognize that Congressional direction through funding mandates and national wildfire policy are having an outsized influence on the Plan Revision process. We urge the LNF to resist this influence as much as possible, and adopt a need to allow forests to naturally adapt to changing climate conditions, which often means not resisting change through active management such as repeated (often unsustainable) vegetation manipulation. The Forest Service partially recognizes this need where it states:For plan direction that provides comprehensive guidance for prescribed fire, unplanned ignitions, and management of wildfire that incorporates fire as a natural disturbance and tool for achieving desired conditions while also recognizing socioeconomic factors,values at risk, the variation in natural fire regimes across different ecosystems, and the departure from natural fire regimes;Id. at 13. Even with this expansive need, it is unclear if the agency recognizes the value and need for a range of wildfire severities, and that managing with perpetual logging or thinning with intentional burning is at odds with incorporating fire as a natural disturbance. In other words, the Forest Service cannot use active management to mimic fire disturbance, though that is the agency's current emphasis. As it develops "comprehensive guidance," we urge the Forest Service to recognize the highly controversial and uncertain nature reflected in its 10-year strategy for numerous reasons.First, the agency relies heavily on historic conditions to define departures from natural fire regimes. Yet, when relying on such historic conditions, the Forest Service often fails to account for the fact that climate change is fundamentally altering the agency's assumptions about the efficacy of its vegetation management proposals. As such there is a need for the Revised Plan NOT to rely on fire regime departures. In fact, recent science calls into question findings that some forested landscapes historically experienced low-severity wildfire and current trends toward higher severities are substantially departed from historic ranges of variability.Specifically, researchers explained,The structure and fire regime of pre-industrial (historical) dry forests over ~26 million ha of the western USA is of growing importance because wildfires are increasing and spilling over into communities.

Management is guided by current conditions relative tothe historical range of variability (HRV). Two models of HRV, with different implications, have been debated since the 1990s in a complex series of papers, replies, and rebuttals. The "low-severity" model is that dry forests were relatively uniform, low in tree density, and dominated by low- to moderate-severity fires; the "mixed-severity" model is that dry forests were heterogeneous, with both low and high tree densities and a mixture of fire severities. Here, we simply rebut evidence in the low-severity model's latest review, including its 37 critiques of the mixed-severity model. A central finding of high-severity fire recently exceeding its historical rates was not supported by evidence in the review itself. A large body of published evidence supporting the mixed-severity model was omitted. These included numerous direct observations by early scientists, early forest atlases, early newspaper accounts, early oblique and aerial photographs, seven paleo-charcoal reconstructions, >18 tree-ring reconstructions, 15 land survey reconstructions, and analysis of forest inventory data. Our rebuttal shows that evidence omitted in the review left a falsification of the scientific record, with significant land management implications. The low-severity model is rejected and mixed-severity model is supported by the corrected body of scientific evidence.Baker et al., 2023. In other words, the Forest Service cannot rely on one interpretation of historic reference conditions to inform its Plan Revision. Rather, the agency must look beyond HRV and inform plan components based on reference sites that reflect current ecological conditions. Such sites would have experienced broadscale disturbances in areas that have a passive management emphasis. In addition, the Forest Service should analyze how those reference conditions may change over the next 50 -100 years based on the best available climate models. It is likely that such analysis will indicate the best management approach is to allow for natural adaptation as a recent study suggests:Forests are critical to the planetary operational system and evolved without human management for millions of years in North America. Actively managing forests to help them adapt to a changing climate and disturbance regime has become a major focus in theUnited States. Aside from a subset of forests wherein wood production, human safety, and experimental research are primary goals, we argue that expensive management interventions are often unnecessary, have uncertain benefits, or are detrimental to many forest attributes such as resilience, carbon accumulation, structural complexity, and genetic and biological diversity. Natural forests (i.e., those protected and largely free from human management) tend to develop greater complexity, carbon storage, and tree diversity over time than forests that are actively managed; and natural forests often become less susceptible to future insect attacks and fire following these disturbances. Natural forest stewardship is therefore a critical and cost effective strategy in forest climate adaptation.Faison et al. 2023. In fact, Forest Plans should not include direction to resist natural adaptation, especially given that "in a time of pervasive and intensifying change, the implicit assumption that the future will reflect the past is a questionable basis for land management (Falk 2017)." Coop et al., 2020. While it is useful to understand how vegetative conditions have departed from those in the past, the Forest Service cannot rely on those departures to define management direction, or reasonably expect the plan will restore ecological processes.Given changing climate conditions, the Forest Service should include plan components that emphasize reference conditions based on current and future ranges of variability, and less on historic departures. Further, the agency needs to shift its management approach to incorporate the likelihood that no matter what vegetation treatments it implements, there are going to be future forest wildfire-triggered conversions to other vegetation types. As such, the Forest Service cannot rely on the success of resistance strategies, as Coop 2020 explains:Contemporary forest management policies, mandates, and science generally fall within the paradigm of resisting conversion, through on-the-ground tactics such as fuel reduction or tree planting. Given anticipated disturbance trajectories and climate change, science syntheses and critical evaluations of such resistance approaches are needed because of their increasing relevance in mitigating future wildfire severity (Stephens et al. 2013, Prichard et al. 2017) and managing for carbon storage (Hurteau et al. 2019b). Managers seeking to wisely invest resources and strategically resist change need to understand the efficacy and durability of these resistance strategies in a changing climate. Managers also require new scientific knowledge to inform alternative approaches including accepting or directing conversion, developing a portfolio of new approaches and conducting experimental adaptation, and to even allow and learn from adaptation failures.Coop et al., 2020. Further, it is equally important to acknowledge other pertinent scientific findings that show warming and drying trends are having a major impact on forests, resulting in tree die-off even without wildfire or insect infestation. See, e.g., Parmesan, C. 2006; Breshears et al. 2005; Allen et al. 2010, 2015; Anderegg et al. 2012; Williams et al. 2013; Overpeck 2013; Funk et al. 2015; Millar and Stephenson 2015;

Gauthier et al. 2015; Ault et al. 2016 ("business-as-usual emissions of greenhouse gasses will drive regional warming and drying, regardless of large precipitation uncertainties"); Vose et al. 2016 ("In essence, a survivable drought of the past can become an intolerable drought under a warming climate"). Given the fallacies of using historic conditions as a reference for desired conditions and the uncertainty that treatments will maintain or restore ecological integrity in the context of climate change and likely forest conversion scenarios, the Forest Service must not adopt plan components that only emphasize resistance strategies.In fact, many of the agency's assumptions run contrary to the most recent science regarding theimpact of logging on wildfire behavior, resilience of the forest to large-scale disturbances, andability to provide quality wildlife habitat. Many scientific studies we cited call into question theForest Service's assumption that perpetual active management will meet the PNC. Ultimately,the agency cannot assert that there is broad consensus in the scientific literature that commercialtimber harvest or thinning in combination with intentional burning (i.e. prescribed fire) reducesthe potential for high severity wildfire to the extent characterized in the proposed action. In fact,such an approach has been broadly questioned within the scientific literature:Fire suppression policies and "active management" in response to wildfires are beingcarried out by land managers globally, including millions of hectares of mixed coniferand dry ponderosa pine (Pinus ponderosa) forests of the western USA that periodicallyburn in mixed severity fires. Federal managers pour billions of dollars intocommand-and-control fire suppression and the MegaFire (landscape scale) ActiveManagement Approach (MFAMA) in an attempt to contain wildfires increasinglyinfluenced by top down climate forcings. Wildfire suppression activities aimed atstopping or slowing fires include expansive dozerlines, chemical retardants and igniters,backburns, and cutting trees (live and dead), including within roadless and wildernessareas. MFAMA involves logging of large, fire-resistant live trees and snags; masticationof beneficial shrubs; degradation of wildlife habitat, including endangered specieshabitat; aquatic impacts from an expansive road system; and logging-related carbonemissions. Such impacts are routinely dismissed with minimal environmental review anddefiance of the precautionary principle in environmental planning. Placing restrictivebounds on these activities, deemed increasingly ineffective in a change climate, isurgently needed to overcome their contributions to the global biodiversity and climatecrises. We urge land managers and decision makers to address the root cause of recentfire increases by reducing greenhouse gas emissions across all sectors, reformingindustrial forestry and fire suppression practices, protecting carbon stores in large treesand recently burned forests, working with wildfire for ecosystem benefits using minimumsuppression tactics when fire is not threatening towns, and surgical application ofthinning and prescribed fire nearest homes.DellaSala et al., 2022. This article comes in response to an article, Prichard et al. 2021, that wesee the Forest Service typically cite to support its proposed actions and assert broad scientificconsensus as to their efficacy. Yet, even here the researchers raise several factors that the ForestService must address in a detailed analysis. For example, they explain:Fuel reduction treatments are not appropriate for all conditions or forest types (DellaSalaet al. 2004, Reinhardt et al. 2008, Naficy et al. 2016). In some mesic forests, for instance,mechanical treatments may increase the risk of fire by increasing sunlight exposure to theforest floor, drying surface fuels, promoting understory growth, and increasing windspeeds that leave residual trees vulnerable to wind throw (Zald and Dunn 2018, Hanan etal. 2020).Such conclusions indicate that treatments within areas of mesic site conditions may not beappropriate. In addition, Prichard et al, 2021 explains the following:In other forest types such as subalpine, subboreal, and boreal forests, low crown baseheights, thin bark, and heavy duff and litter loads make trees vulnerable to fire at anyintensity (Agee 1996, Stevens et al 2020). Fire regimes in these forests, along withlodgepole pine, are dominated by moderate- and high-severity fires, and applications offorest thinning and prescribed underburning are generally inappropriate.The comments we provided regarding the Draft Assessment expand on the scientific uncertaintyand controversy regarding the need for and efficacy of broadscale vegetative management toreduce wildfire severity. Ex. 3. Ultimately, we urge the Forest Service to revise its forest plan in amanner that acknowledges the benefits of all types of wildlife, including high severity fires, anddoes not emphasize perpetual management that creates novel ecosystems with unknownlong-term results.B. Assessment & Species of Conservation ConcernThroughout these comments we note areas where the Forest Service failed to address ourcomments regarding the Revised Plan Draft Assessment. Ex. 3. In addition to these deficiencies,the following provides specific comments on the Forest Service's list for species of conservationconcern.Species of Conservation Concern (SCC) must be chosen to protect the integrity and diversity ofecosystems. The LNF failed

to include an adequate number of SCC including a broad range ofspecies dependent on certain habitat types to ensure ecosystem integrity and diversity across theplanning area. The 2012 planning rule states, "Compliance with the ecosystem requirements ofparagraph (a) of this section is intended to provide the ecological conditions to both maintain thediversity of plant and animal communities and support the persistence of most native species inthe plan area. Compliance with the requirements of paragraph (b) of this section is intended toprovide for additional ecological conditions not otherwise provided by compliance withparagraph (a) of this section for individual species as set forth in paragraph (b) of this section."36 CFR 219.9. The SCC list should include species that are reliant on a specific habitat type andadditional ecological conditions to support diversity and integrity.Instead, the SCC list includes only six animal species, and ten plant species. As we stated in ourcomments, "Just 2 animals, 1 bird and 8 plants are identified as Species of Conservation Concernout of approximately 170 Species of Concern from the Montana Natural Heritage Program thatoccur in the Lolo National Forest area. There are also 62 species on the Forest Service List ofSensitive Species in and adjacent to the Lolo National Forest (p 157)." Our comments provide alist (pages 158-167). The criteria used and the explanation for species chosen does not includediscussion of their habitat type and how it would support compliance with the 2012 PlanningRule's direction to provide for diversity of plant and animals. For example, there is noexplanation as to why the agency selected fisher but not marten or goshawks to ensure the plan ismaintaining or restoring habitat for mature and old growth dependent species.Ultimately, the SCC list must be expanded to provide for the habitat needs that are representativeof all native species on the LNF as required in the 2012 planning rule. SCC must include speciesthat are dependent on different habitat types and ecological conditions found throughout theforest to "provide for the persistence of all native species (RA Chap 1, p 7)" in planningincluding the need for change. We stated, "For example, the Forest Service would not be able tosatisfy this requirement by saying we have a few animals of each species in the Wilderness. TheForest must provide for "well-distributed" populations of breeding age individuals for all Speciesof Conservation Concern across the entire Lolo National Forest (p 157)."The Revised SCC list completely ignores pollinators essential to the integrity of ecosystems andfood sources essential to listed species, "including the huckleberry subspecies dependent onpollinators which are in decline. It must identify the Suckley Cuckoo and Western Bumblebeesas Species of Concern. Suckley Cuckoo are an S1 at High Risk species and the WesternBumblebee is on the IUCN Red List of Vulnerable Species (comments, p 157)."The SCC documents do not list the criteria or explain how the LNF narrowed down the list of116 animals to a mere "78 that warranted in-depth evaluation (SCC animal p iii)" or the list of211 plant species to "86 that warranted an in-depth evaluation (SCC plant, p iii)." The criteriaused to eliminate these species from evaluation and why each individual species was eliminatedfrom the more comprehensive evaluation process must be disclosed.SCC list ignores species dependent on specific habitat types that provide for the persistence of avariety of native species and ecosystem diversity. As we stated in our comments, "The ForestService should include species assemblages that are representative of unique ecosystem typessuch as the unique assemblage of plants and animals that are largely restricted to recently andseverely burned forest conditions as well as species indicative of coastal-disjunct habitatsincluding old growth forest (p 157)."Why was the black-backed woodpecker not considered to provide for the integrity ofDisturbance-Dependent ecosystems? Why weren't Pileated woodpeckers considered to ensurethe integrity of snag forests?The SCC list needs to be greatly expanded, it is especially short on wildlife dependent on oldgrowth that is becoming scarce across the forest. According to the 2021 Lolo National ForestBiennial Monitoring and Evaluation Report (BMER 2021), old growth has been reduced by18,000 acres across the LNF, "Comparing the most current Forest Inventory and Analysis dataset(Hybrid 2015, with data representing 2006-2015) to the most recent one prior to that (Hybrid2011, representing 2003-2011) indicates a reduction of approximately 18,000 acres. (p 15)." Again, why Fisher and not Marten and Goshawks?The LNF must better address our concerns and increase the numbers, types, and spatialdistribution of species of conservation concern in order to comply with 2012 planning rulesmandate to preserve the integrity and diversity of forest ecosystems.EIS must analyze and disclose the effects of an inadequate SCC list on habitat and thepersistence of all native species on the LNF and the habitat types that support them.We reminded the Revision Team in our comments page 138-139, "The Forest Service isrequired, under the National Environmental Policy Act, to insure the professional and scientificintegrity of discussions and analyses in environmental impact statements. (40 CFR section1502.24.) In multiple subsections, the 2012 Planning Rule requires that the Forest Serviceidentify the best scientific information, use it

in preparation of the Assessment, and explainhow that science was used:[sect] 219.3 Role of science in planning. The responsible official shall use the best availablescientific information to inform the planning process required by this subpart. In doingso, the responsible official shall determine what information is the most accurate,document how the best available scientific information was used to inform theassessment, the plan decision, and the monitoring program as required in [sect][sect] 219.6(a)(3)and 219.14(a)(4). Such documentation must: Identify what information was determinedto be the best available scientific information, explain the basis for that determination,and explain how the information was applied to the issues considered."The 1986 Forest Plan included programmatic monitoring concerning wildlife and wildlife habitatto inform a need for change with an amendment or revision. We asked why these results were notincluded in the information to evaluate SCC. "Most mention of programmatic monitoring in theDA cites the 2021 Biennial Monitoring and Evaluation Report (BMER), which covers very littleof the duration of the 1986 forest plan. This ignores the Planning Rule mandate that theAssessment: "Identify and consider relevant existing information contained in governmental ornon-governmental assessments, plans, monitoring reports, studies, and other sources of relevantinformation (pp 4-5)." This information must be included and used to evaluate species for SCCstatus.The criteria for evaluating SCC candidates is inadequate and does not comply with therequirement for best available science nor does it provide for ecosystem diversity and integrity.The Executive Summary for SCC (Summary) states that a species can be ruled out if, "Availablescientific information was insufficient to conclude if there was a substantial concern about thespecies' likelihood to persist in the plan area. Insufficient scientific information includedhaving limited inventory data resulting from low survey effort, lack of effective detectionmethods, or, in the case of purported population declines, lack of reasonably consistentmonitoring methods among trend monitoring periods (emphasis added p 6)." The LNF hasknown this Revision process was coming for over a decade, why wasn't more data collected?According to the SCC Animals document, of the 78 animal species given in-depth evaluation, 47were disqualified because population information was not available or as repeatedly stated."There are no known population estimates for the species in Montana or the plan area (pp, 6, 35,48, 52, 59, 62, 66, 70, 92, 97, 106, 108, 111, 115, 120, 125, 127, 129, 132. 136, 146, 151, 156,167, 171, 175, 179, 182)." The Fisher (pekania pennanti) is the only animal that made the listwithout sufficient population data or trends. The Revision must address the reasons why Fishermade it on the list with non-existent population data, but other worthy candidates were rejected.Lack of information is not a reason to eliminate a species from SCC status. First the LNF omitsall programmatic monitoring data since 1986 except the 2021 report. Second, a lack ofmonitoring and inadequate data on populations is a reflection of the LNF not adequatelyfollowing the 1986 Forest Plan. The Forest Service should first do no harm. Err on the side ofcaution. Without proper data, the forest cannot definitively say the species is not of conservationconcern. The forest must include data from monitoring for the last 38 years and rethinkdisqualifying a candidate for lack of information.Westslope cutthroat trout must be included as a SCC. The RA disqualified Westslope cutthroattrout even though it is ranked S2 in Montana, "At risk because of very limited and/orpotentially declining population numbers, range and/or habitat, making it vulnerable to globalextinction or extirpation in the state (Montana Field Guide)." Montana Fish Wildlife and Parks(FWP) is proposing multiple strategies to prevent the fish from being listed. It must have falleninto the category of, "in the case of purported population declines, lack of reasonably consistentmonitoring methods among trend monitoring periods (Summary p 6)." According to BMER2021, "Despite generally high-quality habitat conditions on the Lolo National Forest, and severalmillion dollars spent on restoration and road remediation projects to improve impaired habitat(see MON-STRM-01,02,03), with a few local exceptions our fisheries monitoring results are notindicating fisheries population improvements where declines exist at a watershed and greaterscales (p 48)." And "Focused fish population trend monitoring for westslope cutthroat and otherspecies such as mountain whitefish or sculpin need to occur in Lolo National Forest watershedsto evaluate pre-restoration and post-restoration population densities where fish population data isavailable. (p 48)."Declines are purported and more info is needed, but westslope cutthroat trout is not considered aSCC. The RA claims that watershed quality is improving, "Overall, changes in riparian andaquatic ecosystem management practices on national forests have greatly reduced the occurrenceof potential threats (Roper et al. 2018), resulting in aquatic and riparian ecosystem conditionsthat are generally improving (Roper et al. 2019) (p 175)." Yet bull trout is declining and othertrout species with it. BMER 2021 states, "More information, context, integration, andprioritization are needed between multi-agency monitoring efforts to more holistically

andeffectively monitor, understand, and expeditiously target impacts affecting bull trout species, andperhaps other population declines (emphasis added p 48)." If the LNF has really improvedwatershed health due to conservation measures and a decline in timber production, as both theDraft and Revised Assessments claim, why are both bull trout and westslope cutthroat trout indecline? One must also note that the INFISH components that have purportedly improvedwatershed health will not be included in the Revised Forest Plan and timber production willincrease. Westslope cutthroat trout are a key species under INFISH and pure-strain populationsare isolated down to about 5%, but it does not qualify under LNF criteria.One of the criteria for SCC is "Local conservation concern due to potentially significant threatsto populations or habitats, declining trends in populations or habitat, restricted ranges orhabitats, or low population numbers (Emphasis added, Summary p 6)." Rising streamtemperatures due to low water levels in streams are a serious threat to westslope cutthroat trout.SCC Animals claims there is "sufficient scientific information available to determine if there issubstantial concern for long-term persistence of the species in the plan area (p 184)." But alsostates,"There are no known population estimates for the species in Montana or the plan area, andsurveys designed to provide reliable abundance estimates for the species (Thompson 2004) arenot known to be on-going within the plan area (p 182)." Then on the next page, it states,Throughout the species range, threats include impoundments (Schmetterling 2003,Ardren and Bernall 2017), timber harvest (Hicks et al. 1991), roads (Heckel et al. 2020),grazing (Peterson et al. 2010), mining (Mayfield et al. 2019), climate change (Dobos etal. 2016, Isaak et al. 2012, Isaak et al. 2015, Wenger et al. 2011, Yau and Taylore 2013,Kovach, Muhlfeld, Al-Chokhachy, et al. 2015, Young et al. 2018) as well as competitionand hybridization with non-native fish (Bell et al. 2021), which is generally considered asignificant threat (Allendorf et al. 2003) (p 183).Not including westslope cutthroat trout on the SCC list makes no sense. Including westslopecutthroat trout would help to ensure integrity and diversity for watershed ecosystems and supportthe persistence of aquatic species. The LNF chooses pearlshell mussels and the harlequin duck,but does not demonstrate how their inclusion will protect the integrity and diversity of aquaticecosystems on which westslope cutthroat trout rely.The SSC list completely ignores mycorrhizal fungi. As we discuss in our comments, "Inidentifying Needs for Change during the Assessment phase, the Forest Service must evaluatescientific information recognizing the key role of soil ectomycorrhizal networks, and investigatescientific information which suggests management-induced damage to soil ectomycorrhizalnetworks threatens soil/site productivity, therefore inhibiting ecological processes and functionsand negatively impacting sustainability (p 113)." Mycorrhizal fungi play an important role inforest ecosystems and should be included in the SCC list. If it is not, the LNF must explain whythey have been omitted. Mycorrhizae in soil habitat is essential to ecosystem processes andfunction. The RA must explain why these vital fungi have not been considered.The RA claims, "It is possible that some species may not meet the criteria for a species ofconservation concern but may warrant specific plan components to support their persistence(emphasis added, Chap 1, p 7)." If a species needs specific plan components to protect theirhabitat or persistence, and their habitat type is not fully represented with another SCC, then theymust be included in the SCC list to ensure diversity. If not, a full explanation as to why the SCClisted provides the ecological conditions necessary to this species must be provided. Compliancewith the requirements of paragraph (b) of [sect]219.8 is intended to provide for additional ecologicalconditions for individual species including Listed, Proposed, and Candidate Species.Furthermore, plan components could be ineffectual to support the persistence of species. BMER2021 made it clear that the LNF is failing Canada lynx and bull trout even with plan componentsto protect them. The EIS must explain in detail how the efficacy of the SCC and related plancomponents be monitored and evaluated and how often?The 2012 planning rule requires the use of a complementary ecosystem and species specificapproach to maintaining diversity of plant and animal communities, the persistence of nativespecies in the plan area, and ecosystem integrity. To that end, the SCC evaluation should includespecies that require habitat types that include the following:(i) Key characteristics associated with terrestrial and aquatic ecosystem types;(ii) Rare aquatic and terrestrial plant and animal communities; and(iii) The diversity of native tree species similar to that existing in the plan area.Please reconsider the following species and the habitat types that would be maintained with theirinclusion on the list. Provide a thorough analysis including their habitat type, other animals thatprovide for that habitat type, programmatic monitoring information from before BMER 2021. Ifthey are not then included on the SCC list, explain the reasons why they were not included, whatother species was chosen for that habitat type, and why is that species more suitable to maintainand restore ecosystem integrity regarding their specific ecological

conditions.1. Elk for habitat security, and quality in big game habitats2. Westslope Cutthroat Trout for water quality, temperature, and connectivity in watershedsand aquatic ecosystems3. Marten for mature and old growth forests4. Northern Goshawk for intact, mature and old growth forests5. North American Porcupine for unfragmented forests6. Northern Bog Lemming for bog and fenn habitats7. Pygmy Nuthatch for old growth forests8. Wolf for predator/prey relationships and their effects on biodiversity9. Pygmy Whitefish for water quality10. Coeur d'Alene Salamander for mesic and old growth forests11. Suckley Cuckoo Bumblebee, a major pollinator for plant diversity12. Western Bumblebee, a major pollinator for plant diversity13. Northern Rocky Mountain Refugium Caddisfly for mesic and old growth forests14. Huckleberry spp. to support grizzly bears15. Wooly-head Clover to support grizzly bearsThe current list of SCC is insufficient to ensure the Revised Plan will contain the necessarycomponents to adequately restore and maintain ecosystem integrity and diversity, nor will theypromote habitat types to support the persistence of native species across the forest. We made thisclear in our comments and our concerns must be addressed.B. Assessment and RoadsOur organizations provided detailed comments on the Draft Forest Plan Assessment (June,2023), much of which the Forest Service failed to address in its Revised Assessment (Sept.2023), and therefore we raise them again here for analysis in the Revised Plan's Draft EIS. Forexample, in regards to the issue of road impacts to forest resources we noted the DraftAssessment failed to disclose the total number of roads by maintenance level, and insteadprovided the total number of roads open to the public. The Revised Assessment (RA) doesexpand the roads assessment, including disclosing there are over 1,100 miles of closed roads. RAat 312. The agency also provided a summary of the 2015 Travel Analysis Report (TAR) with theacknowledgment there are more than 9,000 miles of roads with over 6,000 miles officially part ofthe transportation system. Id. at 313. This means roughly 3,000 miles are unauthorized roads, butthe Forest Service labels them "undetermined." It is unclear how many of these roads wereacquired after 2015, but the agency did provide a short summary from a 2023 TAR on roadsacquired from 2001-2021 that disclosed there are over 2,000 miles and roughly 1,900 milesremain undetermined. Id. at 314. The numbers are useful to be sure, and we appreciate theagency adding this information, however, the Forest Service asserts that the 2015 TAR identified6,000 miles as likely needed, and "could be considered as an approximation of the minimumroad system." Id. This, even as it states, "The minimum road system will continue to change asforest needs change." Id. With this logic, the minimum road system will never be identified, andfurther, ignores the fact that while the needs may change the environmental impacts will grow orpersist. Minimizing the harmful effects of the road system and unauthorized road network mustbe paramount in the revision process with commensurate plan components. Further, we asked foran updated Travel Analysis Report, to which the agency responded by stating, "[r]oute-specifictravel analysis and planning is outside the scope of the Lolo's revision process; however, thisassessment recognizes the need to continue the process of more specific analysis and travelplanning for routes on acquired lands." Id. at 315. Given this disclosure, it is arbitrary for theForest Service to assert that a 2015 TAR appropriately identifies a minimum road system in2024. In fact, by the time the agency completes its Revised Plan, the TAR will be over 10 yearsold. If the agency is not going to update its 2015 TAR, it must include a plan objective tocomplete a TAR for each district, and to identify a minimum road system in a NEPA-leveldecision for each district within 5 years of the plan's adoption. In regards to the assessment, weasked the agency to consider forest access and human wildfire ignitions, but the RevisedAssessment was silent on this issue, and overall, it failed to disclose how the overall roadnetwork affects forest resources. While the Revised Assessment displayed a chart of road riskcategories from its 2023 TAR, it omitted such a chart from its 2015 TAR. Even if such a chartwere included, there was no discussion regarding which resources were at risk from the acquiredroads and certainly nothing in regards to the overall road network (system and non-system). TheRevised Plan Draft EIS must address these shortcomings.C. Consideration of Best Available Scientific InformationWhile certainly not exhaustive, we believe the information contained in this letter and its exhibitsrepresents the best available scientific information, which the 2012 planning rule requires theagency to utilize.3 We ask that you regard it as such, or explain clearly why you disagree whileproviding the scientific basis for your analysis and conclusions.D. Need to adopt Standards and Clear GuidelinesWe urge the Forest Service to establish enforceable standards in the forest plan because it willensure accountability and better environmental protection. Martin Nie (2014), a professor offorest policy at the University of Montana and a member of the national FACA committeeoverseeing implementation of the 2012 planning rule, recommends that the Forest Service utilizestandards in second-generation forest plans:Not only do law and regulation require

standards, but they can also lead to efficiencies in forest planning. They can also be advantageous from a political perspective, as they resonate with a cross section of planning participants, most of whom want agreater degree of certainty, structure, and predictability in forest management.4We agree and encourage the LNF to establish standards in its revised forest plan.Further, while all plan components are enforceable,5 several in the PA fail to provide adequate orclear direction which undermines the ability for the Forest Service to ensure project consistencywith the Revised Plan.6 For example, the PA includes a guideline that directs, "[t]o reduce thelikelihood of establishing unplanned visitor-use patterns, new fuel breaks, temporary roads, skidtrails, and landings should be designed and managed to discourage concentrated use." PA at 59,FW-REC-GDL-03. This guideline is vague because it leaves open to interpretation preciselywhat would discourage use, or what would constitute "concentrated use." Similarly, how wouldforest officials design or manage the infrastructure to discourage use? Without more specificity,responsible officials will have to include detailed descriptions and justifications for how it ismeeting this guideline, and it lacks any measures that would allow monitoring to determine thesuccess of any design or management direction. We see such problems again where the ForestService includes the following guideline:"To protect natural and cultural resources, projects and other management activitiesshould be designed to prevent the creation and/or use of unauthorized recreation routes,and to rehabilitate existing ones to the extent practicable."PA at 99, FW-INF-GDL-03. The intent of this guideline is to prevent or reduce unauthorized use,the intent of which we fully support. However, it fails to provide the necessary direction toclarify what is meant by "the extent practicable" or how projects and management activitiesshould be designed, leaving that completely open to interpretation. For example, we wouldexpect such a direction to specify that no linear feature would be established from an open roador motorized trail that leads to or enters an area protected from vehicle use. Absent direction forproject or management activities designs, the responsible official must provide detailedexplanations to demonstrate consistency with this guideline.III. Achieving a sustainable minimum road systemA. The forest plan revision must provide direction for achieving a sustainable,minimum road system.We are disappointed that the PA fails to provide direction for achieving an ecologically andfiscally sustainable minimum road system. As noted above, the Revised Assessment fails toinclude the necessary information to fully understand the existing condition, particularly themiles of roads that pose high and medium risks. Specifically, the RA fails to disclose road ormotorized route densities that are contributing to habitat degradation and watershed impairment.While the Forest Service asserts it need not update its Travel Analysis Report as part of the planrevision process, it must still disclose the harmful environmental consequences of its roadnetwork in a manner that can meaningfully inform the revised plan. Ultimately though, we urgethe Forest Service to recognize that it must either update its 2015 TAR or address its outdatedinformation and our other related comments in the Revised Plan EIS.Specifically, it is important to note that the Forest Service explains that "[i]n the 2015 travelanalysis report, over 9,000 miles of roads were identified on the Lolo, of which just over 6,000miles were National Forest System routes, and over 3,000 miles were undetermined routes." RAat 312. Though not included in the Revised Assessment, the 2015 TAR concluded that"[a]pproximately 112 miles of road were identified as "likely not needed for future use by anyresource area." 2015 TAR at 18. This represents just 1.9% of all system roads as likely unneeded,or 1.2% of the total road network. Such a paltry amount is unjustifiable to assert that the 2015TAR identifies the likely minimum road system. In addition, the number of undetermined routesincreased with additional land acquisitions considered in a 2023 TAR, where 2,000 miles wereadded to the system from 2001-2021, of which 1,900 are in an undetermined status. Id. at 314.However, it is unclear how many roads in the 2023 TAR overlap with those in the 2015 TAR,meaning the total road network could be roughly 11,000 miles of road, an unheard of number.The Forest Service does state that since the 2015 TAR, "[t]he miles of undetermined routes hasgrown since that report due to recent acquisition of lands to just over 4,100 miles." This is anexcessive amount of unauthorized roads (even if in an undetermined status), and absent a revisedTAR as part of the Plan Revision process, the agency must include a plan component to directcompletion of a new TAR(s), that will identify the highest risk roads to prioritize fordecommissioning.1. Regulatory Frameworka. Road Management under Subpart A of the Travel RuleTo address its unsustainable and deteriorating road system, the Forest Service promulgated theRoads Rule (referred to as "subpart A") in 2001.7 The rule directs each National Forest toconduct "a science-based roads analysis," generally referred to as a travel analysis report.8 Basedon that analysis, forests must: (1) identify unneeded roads for decommissioning or to beconsidered for other uses9; and (2) identify the minimum

road system needed for safe andefficient travel and for the protection, management, and use of National Forest system lands.10The Roads Rule defines the minimum road system as:the road system determined to be needed [1] to meet resource andother management objectives adopted in the relevant land andresource management plan . . . , [2] to meet applicable statutoryand regulatory requirements, [3] to reflect long-term fundingexpectations, [and 4] to ensure that the identified system minimizesadverse environmental impacts associated with road construction,reconstruction, decommissioning, and maintenance.While subpart A does not impose a timeline for agency compliance with these mandates, theForest Service Washington Office, through a series of directive memoranda, ordered forests toproduce a travel analysis report by the end of fiscal year 2015.12 The memoranda articulate anexpectation that forests, through the subpart A process, "maintain an appropriately sized andenvironmentally sustainable road system that is responsive to ecological, economic, and socialconcerns."13 The Washington Office memorandum clarifies that travel analysis reports mustaddress all system roads[mdash]not just the small percentage of roads maintained for passengervehicles. And it requires travel analysis reports to include a list of roads likely not needed forfuture use.The LNF completed its travel analysis report (TAR) in 2015. We reviewed that report, and as weexplained in our comments regarding the Draft Assessment, it did not identify a minimum roadsystem (which can only be done through a NEPA-level decision) and it recommended a paltrynumber of roads for decommissioning. As such, it can hardly be used to actually meet therequirements under subpart A or meaningfully inform the Forest Plan Revision process. Onereason is that conditions on the ground have changed since the time it was drafted, especially inregards to the increasing presence of grizzly bears in certain areas and the addition of theNinemile DCA. Further, the TAR omitted important risks, such as increasing the risk ofhuman-caused wildfire ignitions. The Forest Service must address these, and other, access relatedrisks in its Revised Plan EIS. Such analysis is necessary to truly understand how the PA andother alternatives will move the forest closer to minimizing the road-related impacts.For this reason, we emphasize the need for the Revised Plan to include components that willensure compliance with subpart A through its analysis of site-specific projects of the appropriategeographic size under NEPA,14 actually implement the minimum road system, and todecommission unneeded roads starting with the most problematic. We suggest that thedistrict-scale is the most appropriate geographic size for such a planning effort.b. Land Management Planning under the 2012 Planning RuleThe 2012 Planning rule15 guides the development, amendment, and revision of forest plans, withan overarching goal of promoting the ecological integrity and ecological and fiscal sustainabilityof National Forest lands:Plans will guide management of [National Forest System] lands sothat they are ecologically sustainable and contribute to social andeconomic sustainability; consist of ecosystems and watershedswith ecological integrity and diverse plant and animalcommunities; and have the capacity to provide people andcommunities with ecosystem services and multiple uses thatprovide a range of social, economic, and ecological benefits for thepresent and into the future.16To accomplish these ecological integrity and sustainability goals, the rule imposes substantivemandates to establish plan components - including standards and guidelines - that maintain orrestore healthy aquatic and terrestrial ecosystems, watersheds, and riparian areas, and air, water,and soil quality.17 The rule also requires that plan components must ensure implementation of thenational best management practices for water quality.18The components must be designed "to maintain or restore the structure, function, composition,and connectivity" of terrestrial, riparian, and aquatic ecosystems19; must take into accountstressors including climate change, and the ability of ecosystems to adapt to change20; and mustimplement national best management practices for water quality.21 The rule also requires theForest Service to establish riparian management zones for which plan components "must ensurethat no management practices causing detrimental changes in water temperature or chemicalcomposition, blockages of water courses, or deposits of sediment that seriously and adverselyaffect water conditions or fish habitat shall be permitted."22 In addition, plans must include plancomponents for "integrated resource management to provide for ecosystem services and multipleuses," taking into account "[a]ppropriate placement and sustainable management ofinfrastructure, such as recreational facilities and transportation and utility corridors."23 Plancomponents must ensure social and economic sustainability, including sustainable recreation andaccess.24 And the Forest Service must "use the best available scientific information" to complywith these substantive mandates.25c. National Best Management Practices ProgramThe Forest Service, as stated above, must ensure implementation of the National BestManagement Practices for Water Quality Management on National Forest System Lands(Volume 1, April 2012) to guide road management in forest planning. The National BMPProgram directs the Forest Service

to design the transportation system to limit roads to theminimum practicable number, width, and total length consistent with the purpose of specificoperations, local topography, geology, and climate to achieve land management plan desiredconditions, goals, and objectives for access and water quality management. We recognize thatthe Forest Service's proposed direction includes a watershed standard that requiresproject-specific actions incorporate Federal and Montana's BMPs. PA at 34, FW-WTR-STD-01.Certainly this is a necessary requirement under the 2012 Planning Rule, but it is not sufficient toadequately protect watersheds, as we explain below. Still we support the PA's inclusion of thisstandard.In regards to monitoring, the Forest Service Washington Office has yet to finalize Volume II,regarding how to monitor BMPs to achieve water quality protections. Proper BMPimplementation, followed by thorough monitoring, is an important way to ensure waterways areprotected from road-related impacts. For this reason we appreciate that the PA's monitoringprogram includes direction to measure the "[m]iles of roads and trails where specific waterquality BMPs were applied during road maintenance or reconstruction." PA at 168,IND-CWN-04. However, this direction must apply to all projects with road maintenance orreconstruction, and it should be expanded to include road construction in those areas where it ispermitted. Only monitoring water quality BMPs within the Conservation Watershed Network isinsufficient. Further, the monitoring is specific to implementation, but not effectiveness. TheForest Service cannot assume that just because a BMP is being implemented, that it will be 100percent effective. The agency must address these deficiencies in any adopted alternative.2. The proposed Forest Plan direction must address the Lolo National Forest roadsystem.With forest plans determining the framework for integrated resource management, this planrevision is precisely the place to ensure compliance with the requirements of subpart A and toestablish direction for achieving a sustainable minimum road system. Indeed, the substantiveecological integrity and ecological and fiscal sustainability provisions of the 2012 planning rulecomplement and reinforce the requirements of subpart A. As documented in a literature reviewby WildEarth Guardians,26 the adverse environmental and fiscal impacts associated with existingtransportation infrastructure (e.g., erosion, compaction, sedimentation and impairment of waterquality, fragmentation of wildlife habitat, interference with feeding, breeding, and nesting, spreadof invasive species) directly implicate these substantive requirements.The plan components of the revised forest plan should integrate a variety of approaches to satisfythe substantive mandates of the 2012 Planning Rule and subpart A. The followingrecommendations are based on the Forest Service's current roads policy framework, relevantlegal requirements, and best available science. Where applicable, the recommended plancomponents also incorporate information from the forest assessment and other relevant sourcesof information.a. The Revised Plan must provide direction to remove unneeded roads in orderto improve habitat and aquatic connectivityConnectivity is defined by the Forest Service's 2012 planning rule as "[e]cological conditionsthat exist at several spatial and temporal scales that provide landscape linkages that permit theexchange of flow, sediments, and nutrients; the daily and seasonal movements of animals withinhome ranges; the dispersal and genetic interchange between populations; and the long-distancerange shifts of species, such as in response to climate change."27Roads are known to be a leading contributor to habitat fragmentation.28 The forest's assessmentidentifies a general trend of increasing landscape fragmentation compared to the historiccondition.29 But analysis of the patch metrics of forest openings and multi-storied patches withinindividual habitat type groups was not provided in the Revised Assessment, an omission thatmust be corrected in the Revised Plan's environmental impact statement to ensure informed,meaningful public comment. Large predatory species like grizzly bears are particularlyvulnerable to habitat fragmentation.30 Canada lynx are adversely impacted by habitatfragmentation.31 And wolverine face threats from habitat fragmentation, especially whenconsidering the impacts of climate change on the timing, depth, and duration of snowpack intheir montane habitats.32 In addition, bull trout continue to face a number of threats, includinghistorical habitat loss and fragmentation, interaction with nonnative species, and fish passage.Road crossings over streams are a common migration barrier to threatened bull trout becauseimproper road culverts can reduce or eliminate fish passage.33Yet, the Forest Service is not proposing sufficient plan components that are specifically tied toalleviating terrestrial habitat connectivity concerns, specifically by including road densitystandards. It is imperative that the Forest Service incorporates plan direction that will reduceterrestrial and aquatic habitat fragmentation and improve connectivity within and through theforest. Plan components that direct the removal of unneeded roads, seasonal closures, and thatlimit the construction of roads and motorized trails in areas important for wildlife are critical foraddressing habitat fragmentation and improving connectivity.Moving

towards an environmentally and fiscally sustainable minimum road system requiresremoval of unneeded roads (both system and non-system) to reduce fragmentation and thelong-term ecological and maintenance costs of the system. The continued presence ofunauthorized routes, temporary roads, and stored roads on the landscape allows for harassmentof wildlife, littering, fires, invasive plant distribution, and harm to water quality and aquatic life.It also results in cumulative impacts on the landscape when added to the impacts from systemroads. This is especially true when revegetated roads experience a wildfire. The forest planrevision should envision the removal of all unneeded roads, both system and non-system. That isone reason we called for an updated Travel Analysis Report in our comments on the DraftAssessment. Public understanding as to the location and identification of these roads based onthe list of likely unneeded roads will be critical to meaningful public comment.Reconnecting islands of unroaded forestlands is one of the most effective actions land managerscan take to enhance forests' ability to adapt to climate change.34 Removing unneeded roadsimproves forest resiliency by eliminating conduits for invasive species.35 Scientifically credible,landscape-scale measures of risk to aquatic integrity include miles of road connected by directsurface flow to streams and the number of road or stream crossings by subwatershed.36 Therevised plan should include plan components focused on restoring aquatic and terrestrial habitatsand habitat connections by, in part, reducing stream crossings. The revised plan should prioritizereclamation of unauthorized and unneeded roads in roadless areas (both Inventoried RoadlessAreas under the 2001 Roadless Area Conservation Rule and newly inventoried areas under FSH1909.12, Chapter 70), important watersheds, and other sensitive ecological and conservationareas and corridors.b. Remove unneeded roads to improve watershed healthIn 2011, the Forest Service classified 6th-HUC level watersheds under its Watershed ConditionFramework (WCF), and the LNF reassessed its conditions again in 2021, with the followingresults:Of the 166 watersheds, 51 were rated as functioning properly, 98 were rated asfunctioning at risk, and 17 were rated as impaired. For watersheds that were ratedimpaired, the most significant drivers of the ratings in the plan area were roads. Acrossthe Plan area, watersheds were most commonly rated as impaired for the indicators:aquatic biota, roads and trails, and aquatic habitat condition.RA at 184. Given these findings, it is clear the Forest Service must include plan componentsdirecting the removal of unneeded roads to improve watershed health during the life of the plan.i. Conservation Watershed NetworkThe Forest Service explains that "[t]he conservation watershed network (CWN) is a subset ofwatersheds where management actions are prioritized for the long-term conservation of nativefish and other aquatic species of conservation concern where habitat is expected to persist intothe future in the face of climate change." PA at 40. As we explain further below, we stronglysuggest strengthening the plan components implementing the CWN to ensure it is useful inachieving the stated desired conditions.We have several concerns with the Forest Service's current proposed direction for a CWN thatwe discuss below in the context of bull trout recovery, but overall the PA section addressing theCWN needs more content specific to addressing roads and related impacts. In developingsubstantive CWN plan components, the forest should consider the Northwest Forest PlanAquatic Conservation Strategy objectives and supporting plan components. Reeves et al., 2018.The ACS was developed to restore and maintain the ecological health of watersheds and aquaticecosystems contained within them on public lands.ii. Watershed Condition FrameworkIn addition to[mdash]and separate from[mdash]the CWN, the plan should address roads-related impairmentof watersheds, as identified by the WCF roads and trails indicator as well as section 303(d) of theClean Water Act, 33 U.S.C. [sect] 1313(d). The Forest Service's WCF characterizes the health andcondition of national forest watersheds as Class 1: Properly Functioning, Class 2: Functioning atRisk, or Class 3: Impaired, based on a set of twelve condition indicators (USDA Forest Service2011a). Indicator #6 is the condition of forest roads and trails and provides an important measureof the effects of the transportation system on the ecological integrity of aquatic systems. Theindicator is based on four roads- and trails-related attributes: open road density; roadmaintenance; proximity to water; and mass wasting.As noted above, the LNF contains 115 watersheds that are functioning at risk or have animpaired function, which represents 59% of the total watersheds under the WCF that are notfunctioning properly. Roads were the most significant factor affecting watershed function. Assuch we expected the Revised Assessment to include more information regarding the Road &Trail indicator and its four attributes analyzed to determine its ranking. Ultimately, the ForestService must disclose the subwatersheds that have fair or poor Road and Trail Indicator scores,and demonstrate how the Revised Plan will effectively move these scores to a better ranking. Itshould also prioritize removal of unneeded and unauthorized roads in watersheds functioning atrisk or in an

impaired condition as indicated by Indicator #6, or that contain 303(d) segmentsimpaired by sediment or temperature associated with roads.c. Adopt road density thresholds to ensure an ecologically sustainable road systemAdopting road density thresholds for particular parts of the landscape or forest matrix is one ofthe most effective strategies for achieving an ecologically sustainable road system.37 Roaddensity thresholds are critical to protecting important watersheds, migratory corridors and otherkey wildlife habitat. There is a direct correlation between road density and various markers forspecies abundance and viability.38 Plan components should incorporate road density thresholds,based on the best available science, as a key tool in achieving a sustainable minimum roadsystem that maintains and restores ecological integrity.39 In doing so, it is critical that the densitythresholds apply to all motorized routes, including closed, non-system, and temporary roads, aswell as motorized trails.40The Proposed Action omits any road density or motorized route density standards and theRevised Assessment downplays its importance in its discussion about grizzly bear management:"Secure habitat is an important metric because it portrays the impact of the spatial arrangementof motorized routes on the landscape more effectively than a simple road density calculation."RA at 165. We agree secure habitat is an important metric, and one informed by motorized routedensity calculations. Road or motorized route densities affect a range of species, in particular elkand bull trout. For a time, the Forest Service limited constructing new permanent roads in favorof temporary roads, and though we see that trend reversing, the agency still emphasizestemporary roads, reconstruction of closed or stored roads, and use of unauthorized roads.Omitting road density standards fails to address the need to better manage the harmfulconsequences of the LNF sprawling road network (both system and non-system), and ignores theForest Service's increased use of temporary roads, which directly impact the landscape andreduce wildlife security for years following a project.41d. Maintain needed roads to ensure a resilient future forestA sustainable road system requires maintenance and modification of needed roads andtransportation infrastructure to make it more resilient to extreme weather events and otherclimate stressors.42 Inadequate road maintenance leads to a host of environmental problems. Itincreases the fiscal burden of the entire system, since it is much more expensive to fix decayedroads than maintain intact ones. And inadequate road maintenance endangers and impedes accessfor forest visitors and users due to landslides, potholes, washouts and other failures. For thesereasons it is imperative that the Forest Service reduce its road maintenance needs by reducing itsroad system, and revising its 2015 Travel Analysis Report to update its list of unneeded roads.The agency explains that "[r]oad maintenance with limited funding available is focused on roadsopen to public travel that access administrative sites and high use recreation sites." The ForestService did not disclose the amount of deferred maintenance backlog for its system roads, or howmany high-risk roads closed to the public are part of this deferred maintenance. The agency mustaddress these deficiencies in its Revised Plan EIS, and disclose the environmental consequencesfrom its lack of maintenance, and from its prioritization of maintaining only certain roads open tothe public.Plan components should direct the roads identified as likely needed in the travel analysis reportsto be upgraded to standards able to withstand more severe storms and flooding by, for example,replacing under-sized culverts and installing additional outflow structures and drivable dips.43The Forest Service should also consider plan components directing the forest to moveparticularly problematic segments of needed roads, if possible, to reduce hazardous conditions,severe failure risk, and to improve fish passage.e. Create a financially sustainable road systemA sustainable road system must be sized and designed such that it can be adequately maintainedunder current fiscal limitations. The LNF's current road system is unaffordable by the ForestService's own admission:Current and projected road budgets do not fund road maintenance needs. One possibleresult will be that more road miles placed in storage (maintenance level 1). Roadmaintenance emphasis will be placed on promoting safety, aquatic organism movement,and protecting water quality. A road system that is not fully funded may increase the riskof impacts on water quality and aquatic ecosystems. Best Management Practices designedinto projects will reduce much of this impact.RA at 314. The Forest Service did not disclose the amount of funding it would require to bringeach road segment into compliance with its road management objectives and meet its regularlyscheduled maintenance period. The deferred maintenance backlog is not included in the RevisedAssessment, and the Forest Service must disclose this amount in its Revised Plan EIS, along withthe environmental consequences from the lack of maintenance. This information is crucial as weoften see the Forest Service assert that it cannot afford to decommission unneeded roads, andwhere roads have medium or low resource value, the agency often recommends long-termstorage in place of decommissioning due to funding

constraints. However, these same roads mayhave medium or high risks, and therefore should be decommissioned. In any case, the ForestService must take a hard look at its funding for road maintenance and decommissioning, anddemonstrate why it is more fiscally responsible to keep a deferred maintenance backlog insteadof identifying more roads as unneeded and setting a decommissioning objective that will alignthe LNF road system with its projected road maintenance budget.3. Recommended plan components to achieve an ecologically and fiscally sustainable roadsystem.To integrate these approaches and satisfy the substantive mandates of the 2012 Planning Ruleand subpart A, we recommend the following plan components and elements[mdash]supported by bestavailable science[mdash]as the building blocks of a framework for sustainable management of forestroads and transportation infrastructure.a. Recommended Desired Future ConditionDesired conditions are "specific social, economic, and/or ecological characteristics of the planarea[hellip] toward which management of the land and resources should be directed."44 Includeachievement and maintenance of an appropriately sized and environmentally and fiscallysustainable minimum road system as a desired condition. The Forest Service's current roadsmanagement policy framework is generally aimed at shrinking the agency's vast and decayingroad system and its host of adverse environmental and social impacts. Accordingly, the desiredfuture condition for transportation infrastructure should include a well-maintained system ofneeded roads that is fiscally and environmentally sustainable and provides for safe and consistentaccess for the utilization and protection of the forest. We recommend the plan include thefollowing desired condition:

* Identify, implement and maintain an appropriately sized and environmentally and fiscally sustainable minimum road system.

Certainly we recognize the PA includes specific desired conditions that appear to mirror ourrecommendation, including a DC that states "A safe and cost-effective transportation systemincluding roads, trails, bridges, and culverts provides safe public and administrative access toNFS lands while protecting natural and cultural resources."45 However, the Forest Service shouldrevise this condition to expressly refer to long-term funding expectations. This makes sensegiven the forest plan is a long-term planning document. Ways to reduce costs include: removeunneeded roads, including temporary and non-system roads; and make sure to not exceed densitystandards, based on the best available science, for all motorized routes in important watershedsand wildlife habitat, migratory corridors, and general forest matrix, and for relevant threatenedand endangered species and species of conservation concern. Include a guideline that roadconstruction, reconstruction, decommissioning, and maintenance activities shall be designed tominimize adverse environmental impacts.b. Climate ResilienceClimate change generally intensifies the adverse impacts associated with roads. In particular, thewarming climate is expected to lead to more extreme weather events, resulting in increased floodseverity, more frequent landslides, altered hydrographs, and changes in erosion andsedimentation rates and delivery processes.46 Many national forest roads were not designed tocurrent engineering standards (or, in some cases, any engineering standards), making themparticularly vulnerable to climate-induced hydrologic shifts. That vulnerability is furtherexacerbated by the deteriorating physical condition of the system and significant maintenancebacklog, as described above. Moreover, even those roads designed to current engineeringstandards and hydrologic conditions may fail under future weather scenarios, further intensifyingadverse ecological impacts, public safety concerns, and maintenance needs. For example, as thewarming climate alters species distribution and forces wildlife migration, landscape connectivitybecomes even more critical to species survival and ecosystem resilience.47The desired future condition for transportation infrastructure should include a climate resilientforest road system designed and maintained to withstand predicted future storm events.Identifying a resilient future road network is one of the most important endeavors the ForestService can undertake to restore aquatic systems and wildlife habitat, facilitate adaptation toclimate change, ensure reliable recreational access, and operate within budgetary constraints.c. Objectives to achieve a minimum road systemThe planning rules define an objective as "a concise, measureable, and time-specific statement ofa desired rate of progress toward a desired condition or conditions."48 We recognize the PAincludes a number of road-related Objectives that will improve current road management, butstill fall short of identifying and implementing a minimum road system. Therefore we suggestthe following Objectives:

* Within 3 years of plan adoption, identify the minimum road system and an implementation strategy for achieving that system.
* Over the life of the plan, decommission all roads identified as likely not needed for future use in the travel

analysis report.
* Within 10 years of plan approval, decommission high-priority, unneeded roads with the most benefit in achieving an ecologically and fiscally sustainable transportation network
* Within 10 years of plan approval, address all roads within at-risk or impaired watersheds that have a "poor" ranking under the WCF roads and trails indicator, and within watersheds contributing to sediment or temperature impairment under section 303(d) of the Clean Water Act.
* Within 5 years of plan approval, establish a publicly available system for tracking temporary roads that includes but is not limited to the following information: road location, purpose for road construction, the project-specific plan required below, year of road construction, and projected date by which the road will be decommissioned. Within 10 years of plan approval, all temporary roads will be reflected in the tracking system.
* Over the life of the plan, all identified temporary roads without a project-specific plan will be decommissioned.
d. Standards must ensure that roads do not impair ecological integrity and otherwisesatisfy the substantive requirements of the 2012 Planning Rule and subpart A.A standard is a mandatory constraint on a project and activity decisionmaking, established tohelp achieve or maintain a desired condition, to avoid or mitigate undesirable effects, or to meetapplicable legal requirements.49 The 2012 planning rule requires that plans provide for theecological integrity of aquatic and terrestrial ecosystems and watersheds, including maintainingor restoring their structure, function, composition, and connectivity, while taking into accountfactors such as climate change and other stressors, the broader landscape beyond the plan area,and opportunities for landscape-scale restoration.50Further, though we discuss Riparian Management Zones below, we also include the issue here asit relates to roads. Riparian Management Zones (RMZs) are portions of watersheds whereriparian-associated resources receive primary emphasis and management activities are subject tospecific standards and guidelines. In addition to the Roads and Trails standards suggested below,the Forest Service must establish standards that better address road activities in RMZs to ensureprotection of riparian resources. As it stands, the agency includes the following:Newly constructed or reconstructed roads shall not encroach into streams and riparianmanagement zones if this action increases the net long-term negative effect to the aquaticecosystem, including impacts to the floodplain function and geometry.PA at 98, FW-INF-STD-03. The standard is vague and permissive as it leaves open tointerpretation, and abuse of discretion, what precisely constitutes the "net long-term negativeeffects," the standard is meant to prevent. Failing to define short-term or long-term effects meansa road could be constructed or reconstructed within the RMZ. Further, none of the standardsaddress unauthorized roads found within the RMZ. For these reasons we urge the Forest Serviceto adopt more protective and clearer road standards for the RMZ:
* No permanent road construction shall occur with the RMZ.
* No temporary road construction or reconstruction shall occur within the RMZ, unless the responsible official demonstrates such activities are unavoidable. Any temporary roads constructed must be physically decommissioned within 3 years of use.
* No unauthorized routes will be added to the transportation system within the RMZ, and any utilized for project-level activities shall be physically decommissioned within 3 years of use.
* For new road construction and reconstruction of existing road segments adjacent to riparian management zones, do not side-cast fill material into the RMZ.
In addition, we provide the following general infrastructure standards:
* In impaired and at-risk watersheds, areas of connectivity, and mature or old growth stands, there shall be no increase to the baseline total motorized route density.
* In habitat needed for the recovery of threatened and endangered species, and the maintenance of viable populations of species of conservation concern, there shall be no increase to the baseline total motorized route density.
* Temporary road plan: No temporary road shall be constructed prior to the development of a project-specific plan that defines how the road shall be managed and constructed.
* Avoid all wetlands and unstable areas when reconstructing existing roads or constructing new roads and landings. Minimize impacts where avoidance is not possible.
* Avoid all wetlands and unstable areas when reconstructing existing roads or constructing new roads and landings. Minimize impacts where avoidance is not possible.

* In fish-bearing streams, construction, reconstruction, or replacement of stream crossings shall provide and maintain passage for all life stages of native aquatic organisms unless barriers are necessary to prevent spread or invasion of nonnative species.
* To reduce the risk to aquatic resources when decommissioning roads, closing roads, or putting roads into intermittent stored service, roads shall be left in a hydrologically stable condition.

* For decommissioned roads, reclaimed roads, or impassable roads, this means the road must be re-vegetated, no longer function as a road, and all stream-aligned culverts must be removed.
* For intermittent stored service roads, this means all stream-aligned culverts must be removed.
* Defining "hydrologically stable condition" is critical to implementation and effect of this plan component, as is distinguishing between decommissioned - reclaimed - impassable roads and intermittent stored service roads.
e. Design guidelines to achieve a sustainable minimum road system.
* For projects with road-related actions, the purpose and need statement should include achieving a sustainable minimum road system and the analysis should consider recommendations from travel analysis reports.

* To enhance landscape connectivity and ecological integrity, prioritize road decommissioning based on:
* Effectiveness in reducing habitat fragmentation in areas of connectivity;
* Increasing habitat security for at-risk and sensitive species;
* Addressing impaired or at-risk watersheds;
* Achieving motorized route density standards; and
* Meeting scenic integrity desired conditions
* To enhance public safety and efficiency of the transportation system, prioritize maintenance of needed routes based on:

* Storm-proofing needs and opportunities (e.g., relocating roads away from water bodies, resizing or removing culverts, etc.);
* Restoring aquatic and terrestrial habitats and habitat connections by, in part, reducing or upgrading stream crossings.
4. Establish a monitoring program that ensures progress toward desired conditions.A thoughtful forest plan monitoring program is critical because it determines the degree to whicha forest plan is maintaining or making progress toward achieving desired conditions.51Monitoring questions should be based on desired conditions, objectives, or other plancomponents.52 We suggest the following annual monitoring questions to address the desiredconditions and objectives outlined above:
* Miles of road improved or maintained to meet BMP guidelines?
* Miles of road addressed for all roads within at-risk and impaired watersheds according to the WCF roads and trails indicator, and within watersheds contributing to sediment or temperature impairment under section 303(d) of the Clean Water Act?
* Percentage of road miles decommissioned in a subwatershed with a "poor" WCF roads and trails indicator?
* Miles of roads identified as likely not needed for future use in the travel analysis report decommissioned?
* Miles of road decommissioned for roads identified as high-priority, unneeded and with the most benefit in achieving an ecologically and fiscally sustainable transportation network (e.g., roads posing a high risk to forest resources, roads in inventoried roadless areas and other ecologically sensitive areas, etc.)?
* Percentage of forest with increased habitat fragmentation in important wildlife habitat?
* Percentage of subwatersheds with an identified minimum road system?
* Percentage of subwatersheds with an implemented minimum road system?
IV. Providing for Sustainable RecreationA. Legal Framework1. Sustainable Recreation under the 2012 Planning ruleThe 2012 planning rule establishes ecological sustainability as the overarching goal of planning,and directs that land management plans should provide people and communities ecosystemservices and multiple uses that provide a range of benefits[mdash]including recreational, educational,and spiritual[mdash]for the present and into the future.53 To achieve this, the rule requires the ForestService to provide for "sustainable recreation" and emphasizes the importance of connectingpeople with nature. As set forth in the rule, sustainable recreation is

"the set of recreation settingsand opportunities on the National Forest System that is ecologically, economically, and sociallysustainable to present and future generations."54 We caution the Forest Service to give carefulconsideration to determine what recreational uses are ecologically sustainable,55 and notapproach providing recreational opportunities as an exercise of dividing the pie. Rather, theagency must first identify its decision space based on what recreational uses are ecologicallysustainable, and then allocate areas of opportunity based on what is socially and economicallysustainable. In other words, the desires of those with recreational interests must not be met atthe expense of an area's ecological integrity.In revising a forest plan, the Forest Service must develop plan components, including standardsand guidelines, to provide for sustainable recreation, including sustainable settings,opportunities, and access.56 It must develop plan components, including standards andguidelines, to guide the plan area's contribution to social and economic sustainability, taking intoaccount sustainable recreation, including recreation settings, opportunities, and access, sceniccharacter, and opportunities to connect people with nature.57 And it must include plancomponents, including standards and guidelines, for integrated resource management to providefor ecosystem services and multiple uses in the plan area, considering: (1) appropriate placementof infrastructure, such as recreational facilities, (2) opportunities to coordinate with neighboringlandowners to link open spaces and take into account joint management objectives wherefeasible and appropriate, and (3) opportunities to connect people to nature.58In regard to the interface of recreation and protecting environmental resources, the planning rulerequires plan components, including standards and guidelines, to ensure achievement of thesubstantive provisions related to ecological integrity, sustainability, and diversity at 36 C.F.R. [sect][sect]219.8(a) and 219.9. The Forest Service, therefore, needs to develop plan components guiding themanagement of recreation settings, opportunities, infrastructure, and access that do not impedethe achievement of the substantive provisions.2. Planning DirectivesThe planning directives add detail to the planning rule's provisions. The Forest Service shouldreview information from the assessment, the need for change, and distinctive roles andcontributions related to recreational settings, opportunities, and access in the plan area, as well aspublic preferences or demand for certain uses.59 It should consider compatibility of differentrecreational uses in specific areas.60Drawing on the unit's distinctive role and contributions, the directives urge the forest to beproactive in developing a "coherent system of sustainable and socially compatible recreationopportunities."61 In doing so, the Forest Service should use the ROS to define recreation settings,and then establish compatible activities (opportunities) within those settings.62 The ForestService can create ROS sub-classes to reflect specific situations on a forest or reflect seasonalvariations.63 Integrated planning should form the basis for sustainable recreation. "At the forestscale, sustainable recreation is derived through the integrated planning process and emerges asthe resultant set of desired recreation opportunity spectrum classes."64The desired ROS layer should be the result of a rigorous interdisciplinary process that would, forexample, identify where in the landscape recreation is a "stressor" (like climate change) to otherresource values (like water quality, aquatic species, meadows, etc.). The identification andallocation of desired recreation settings should not be done after other resource allocations aremade. This has happened in the past and resulted in the subordination of recreation settings toother resource allocations.65 Further, it is crucial that the Revised Plan clarify that areadesignations under the Travel Management Rule (TMR) and ROS allocations are two separate,albeit related, decisions. Forest planning is a broad-brush process in which general suitability forvarious activities is determined. The ROS classification system and management areaclassifications are both useful tools but they do not reach the level of specificity required bytravel planning. Backcountry motorized, semi-primitive motorized, and roaded natural ROSsettings provide a good starting point for where to designate OSV routes and areas but the ForestService should not assume that all OSV use should be allowed across the entirety of these areas,or across all management areas where OSV use is allowed. Winter semi- primitive motorizedareas, and winter roaded natural areas both provide quality backcountry ski experiences. Manypeople enjoy Nordic skiing and touring on snow-covered forest roads and having an opportunityto do so without having to contend with motorized activity is a valuable experience that the LoloNF must recognize and accommodate. Therefore, it is important that the Forest go beyondsimply relying on ROS classifications to determine where OSV use will be allowed. As we notedabove, it is unclear how the agency is identifying areas suitable for motorized recreation, andshould consider developing suitability determinations for various recreational uses, access,infrastructure and facilities.66 "The identification of suitability or nonsuitability of lands is basedon the desired condition for those lands and the inherent capability of

the land to support theuse."67 In regards to winter motorized ROS, declining snowpack, shortening of the grizzly beardenning season and the listing of wolverine as a threatened species due, in part, to the climatecrisis all indicate that the ROS allocations must be carefully evaluated to ensure they meet the2012 Planning Rule requirements, and provide an appropriate starting point for reviewingmotorized designations, as we discuss next.B. Existing Motorized Designations - Summer & WinterThe Forest Service codified the minimization criteria in subpart B of the 2005 National TravelManagement Rule.68 The 2005 National Travel Management Rule (TMR) requires nationalforests to designate roads, trails, and areas open to motorized vehicles, and display thosedesignations on a motor vehicle use map (MVUM).69 It also prohibits motor vehicle use offdesignated system routes and areas. The Forest Service explains the following:The 1986 plan was developed under 1982 planning regulations, which included arequirement to identify where off-road vehicle use would be planned, implemented, andpermitted. The travel management regulations at 36 CFR 212.52(a) and 212.81(b) allowfor publication of motor vehicle use maps with public notice if a unit has made previousadministrative decisions under other authorities restricting motor vehicle use.70In 2013, Winter Wildlands Alliance successfully challenged the 2005 Travel Management Rule'sexemption for designating over-snow vehicle (OSV) areas and trails in federal court. As a result,the Forest Service revised its travel rules and in 2015 finalized subpart C. Under this rule, eachnational forest unit with adequate snowfall must designate and display on a map a system ofareas and routes where OSV use is permitted based on protection of resources and otherrecreational uses. OSV use outside the designated system is prohibited. Ultimately, this meansthat rather than allowing OSV use largely by default wherever that use is not specificallyprohibited, the rule creates a paradigm shift to a "closed unless designated open" managementregime. Implemented correctly, the rule presents an important opportunity to enhance qualityrecreation opportunities for both motorized and non-motorized users, protect wildlife during thevulnerable winter season, prevent avoidable damage to air and water quality, and restore thebalance to the winter backcountry on the Lolo National Forest.The TMR allows the responsible official for each forest to incorporate previous administrativedecisions regarding travel management made under other authorities,71 (grandfathering clause)and the LNF opted to use this provision to comply with the regulations:The travel management regulations at 36 CFR 212.52(a) and 212.81(b) allow forpublication of motor vehicle use maps with public notice if a unit has made previousadministrative decisions under other authorities restricting motor vehicle use. Based onprevious decision-making, the Lolo National Forest has been publishing motor vehicleand over-snow motor vehicle use maps since 2014.72We certainly recognize and appreciate the management direction provided under the 1986 Planthat helped limit the damage and impacts from cross-country summer motorized travel. Since thepublication of the LNF's first summer motor vehicle use map there have been site-specificprojects that have altered those maps, including designating new motorized trails and openingroads for public use. We urge the Forest Service to disclose those site-specific decisions andsummarize the changes made since the first MVUM was issued under the 2005 TravelManagement Rule (TMR). Further, the Forest Service explained that a majority of the LNF hasprotections from over-snow vehicle (OSV) use where only 21% is in a winter motorizedsetting.73 To be clear, this percent still totals more than 472,500 acres where the agency hasdesignated OSV per the TMR's grandfathering clause and perhaps other site-specific projectdecisions. However, overall the LNF has yet to conduct a forest wide or district level review ofits summer or winter motorized designations to verify they meet the TMR's requirements. Asnoted, there have been site-specific motorized designations for both summer and winter useunder certain projects, which is why we're requesting a list of those projects and the designationsapproved under past decisions. Those decisions and the motorized designations carried forwardper the current forest plan must undergo review to ensure their consistency with NEPA,especially where conditions have changed. This NEPA sufficiency review must demonstratecompliance with the minimization criteria under the TMR. As such, we strongly urge the agencyto include an objective to complete a NEPA/TMR sufficiency review for each motorizeddesignation older than 10 years.C. Plan components must provide for sustainable recreation.1. Ecological SustainabilityThe Forest Service must include plan components, including standards or guidelines, to maintainor restore the ecological integrity of terrestrial and aquatic ecosystems and watersheds in the planarea, including plan components to maintain or restore structure, function, composition, andconnectivity.74 Based on the Revised Assessment, the existing recreation settings are notecologically sustainable.75 In particular, technological advancements have changed the waypeople can and do use off-highway vehicles on the Forest, both in the summer and winter.762. Social and

Economic SustainabilityThe plan must include plan components, including standards or guidelines, to guide the planarea's contribution to social and economic sustainability.77 Existing management appears todetract from, rather than contribute to social and economic sustainability.The 2012 planning rule defines social sustainability as "the capability of society to support thenetwork of relationships, traditions, culture, and activities that connect people to the land and toone another and support vibrant communities."78 Existing motorized use designations do notappear to support social sustainability. For example, non-motorized activities such as hiking andwalking are very popular across the state.79 Further, while motorized recreational use hasincreased since 2000, future interest is in decline and among the lowest projected growth inparticipant numbers with an increase between 29 - 56 percent for summer use and 25 - 61percent for winter use.80 While still an increase, visiting primitive areas is projected to increasebetween 33 - 65 percent, which is still among the lowest growth increase, but still higher thanmotorized recreation. Importantly, "undeveloped skiing (55 to 106 percent increase)" representsone of the biggest increases in trends of recreational uses.81 This is an important factor whenconsidering allocating areas for winter non-motorized use, which is why the existing conditionfor winter motorized use is over-represented across the forest, and why the initial desired ROSallocations for winter non-motorized was reasonable, even while not sufficient to meet thedefinition of sustainable recreation. Finally, the top ten recreational uses of the LNF do notinclude motorized recreation: "The top ten reasons people recreate in the plan area arehiking/walking, viewing wildlife, viewing natural features, relaxing, driving for pleasure, fishing,hunting, nature study, downhill skiing, and biking (U.S. Department of Agriculture 2023c)."D. Recommended Plan components to achieve sustainable recreationDesired ConditionsThe plan must include plan components, including standards or guidelines, to provide forsustainable recreation. To meet this requirement, the plan must include desired conditions forsustainable recreation using mapped desired ROS classes. While the initial desired ROSallocations for primitive and semi-primitive non-motorized was a step in the right direction, (andone that should not be weakened by correcting so-called "errors"), we urge the agency toconsider an alternative that allocates a ROS primitive classification to all Inventoried RoadlessAreas recommended for Wilderness in the Citizen Plan. We also urge the agency to extend thisclassification to all unroaded areas less than 5,000 acres. Should the Forest Service consider thisdirection as unreasonable, we stand ready to discuss how we can best adapt the Citizen Plan to areasonable alternative for analysis in the Draft EIS. In any event, the Forest Service mustdemonstrate in its analysis how the ROS allocations support achieving sustainable recreationacross the planning area. As it stands, those listed in the PA still allow motorized use in areasunsuitable for such activities, particularly in habitat for at-risk and sensitive fish and wildlifespecies.86Absent allocating too many acres for motorized recreation disproportionate to the levels of useoccurring across the forest and the projected levels of increase, the desired conditions for bothgeneral recreation and for the ROS allocations are well-meaning and we offer the following tohelp the agency achieve sustainable recreation. For the section listing FW-REC-DC, we urge theagency to add the following:

* The design, management and maintenance of the designated motorized system of roads, trails and areas is climate resilient and able to withstand variable storm events and wide fluctuations in precipitation, including snowfall.
* The design, management and maintenance of the designated motorized system of roads, trails and areas provides landscape and aquatic connectivity necessary for the recovery and viability of fish and wildlife species.
* Infrastructure and development related to sustainable recreation reflects long term funding expectations.

For the desired condition FW-ROS-DC-02, we request all Roadless Areas be placed in aprimitive setting, and that the agency revise it to ensure that the settings reflect the ecologicalcapabilities of the area in order to provide for sustainable recreation:

* Outdoor recreation opportunities and experiences are available year-round in a range of settings, as described by the desired distribution of forestwide recreation opportunity spectrum settings (Table 12). These settings reflect the integration of other resource values with the desired recreation opportunities, access, facilities, and infrastructure provided within those settings. These settings are commensurate with the ecological capabilities of the ROS allocated area. Locations of desired recreation opportunity spectrum settings are mapped in appendix 1."

ObjectivesAs we noted, due to the grandfather clause in the Travel Management Rule forests had the optionto produce a Motor Vehicle Use Map based on existing authorizations if there were no changesor additions that

expanded off-road vehicle use. The LNF has been issuing Motor Vehicle andOver-Snow Vehicle Use Maps based largely on the 1986 Forest Plan, and has been issuing themaps with changes as necessary to reflect new decisions. However, it is likely that someconditions have changed since those decisions were issued and certainly since the agency issuedits first motor vehicle use maps. Therefore we strongly recommend the Revised Plan include thefollowing objective:

* Within 5 years of plan approval, each district will complete a NEPA sufficiency review for all summer and winter motorized designations older than 10 years, open to public comment, to verify those designations comply with the Travel Management Rule and all other applicable laws and regulations.
* Within 3 years after a NEPA sufficiency review for all motorized designations, initiate travel management planning for all designations found not to be in compliance with the Travel Management Rule or other applicable laws and regulations.

StandardsWe appreciate that the Forest Service included standards to ensure motorized use conforms to theapplicable ROS allocations, and we support the direction to protect adjacent non-motorizedsettings when designating motorized use as reflected in FW-ROS-STD-02. We also support thedirection in FW-ROS-STD-03 that "no routes or areas shall be designated for motorizedtransport." FW-ROS-STD-03. In addition to these standards, we recommend the following toensure consistency with our proposed objectives and desired conditions:

* Add a general standard - Close roads, trails and areas to public motorized use where the NEPA sufficiency review finds specific motorized designations are not in compliance with the Travel Management Rule or other applicable laws and regulation.
* Add a general standard for OSV use - Designated OSV areas may only open to cross-country motorized use when snow depth measurements at established, representative locations reach at least 24 inches. For groomed OSV trails, snow-depth must reach at least 18 inches.
* Change guideline FW-ROS-GDL-06 to a standard: "To retain quiet recreation character, roads should not be plowed for recreation access in desired winter semi-primitive nonmotorized settings."87

GuidelinesThe Forest Service proposes a number of guidelines that provide good direction for ensuringconsistency with the ROS allocations, however, there is a need to clarify for managers and thepublic that identifying areas as available for motorized designations does not automaticallyequate to such use as being compatible with the TMR's minimization criteria. As such, werecommend the following:- Off-road and over-snow vehicle use within areas that have a ROS motorized setting, must be demonstrated to comply with the Travel Management Rule and other applicable laws and regulations.SuitabilityWe strongly recommend that the Forest Service consider fish and wildlife habitat requirementsfor threatened and endangered species, sensitive species and species of conservation concern.The agency must ensure that any motorized ROS allocations "contribute to the recovery offederally listed threatened and endangered species, conserve proposed and candidate species, andmaintain a viable population of each species of conservation concern within the plan area."88 Assuch the Forest Service must demonstrate how its findings that areas are suitable for motorizeduse meet the 2012 Planning Rule direction. At a minimum, the Forest Service should identifywinter denning habitat for species such as grizzly bears and wolverine as unsuitable for wintermotorized use.V. Grizzly Bear Management and ConnectivityThe PA for Grizzly Bears (Appendix 9) is woefully inadequate and legally deficient. TheStandards and Guidelines apply only to the NCDE Primary Conservation Area (Recovery Zone)and Zone 1 and mostly just within the Recovery Zone.The National Forest Planning Regulations require that species be "well-distributed across theplanning area." The planning area is the Lolo National Forest. Thus, standards and guidelinesmay not be arbitrarily restricted to one part of the planning area. Moreover, grizzly bears withinthe "occupied" and "may be present" areas cover the entire Lolo National Forest (see Figure 1)further necessitating Forest-wide standards.Figure 1. USFWS Grizzly bear species list area map89Assumptions made in other documents from the Lolo National Forest, including the forest-widebiological opinion are bogus. For example, the agency assumes female grizzly bears will notreach the western part of the Forest for 15-20 years. In fact, the USFWS estimates grizzly bearbreeding will occur within the Bitterroot Ecosystem in Idaho in as soon as 15 years (USFWSScoping Notice 2024). One analysis shows female grizzly bears will reach the edge of the BE in5-10 years (Bader and Sieracki 2024, see Ex. 5).In fact, residential occupancy of the entire Lolo National Forest is projected to occur in less thanthe lifetime of the Revised Forest Plan. Therefore, the time to adopt and implement

standards isnow, otherwise the Revised Plan will be legally deficient. Figure 2 shows a conservativeexpansion model of how the "occupied" area of the NCDE population is expanding, and Figure 3displays the likely dispersal routes of females with cubs. Within a few years the "occupied" areawill encompass the entire Lolo National Forest.Figure 2. Potential grizzly bear expansion from the NCDE to the BEIn addition, the PA glossary contains grossly inaccurate definitions. For example, thenon-denning season for grizzly bears is shown as April 1-November 30 which is outdated in theera of climate change and must be updated to incorporate the best available scientificinformation. PA at 203. According to Montana Fish, Wildlife & Parks, between 2015-2022, 53%of collared bears in the Montana portion of the GYE were active in March and as early asJanuary and February and grizzly bears have been documented active in all months of the yearthroughout Montana. In the NCDE, females with cubs were documented active on December31st, 2023 and hundreds of grizzly bears were active throughout December 2023 throughoutMontana. Grizzly bears were documented active in January, 2024 by the Custer-GallatinNational Forest. The most recent Species Status Assessment for Grizzly Bears (USFWS) findsthat grizzly bears "remain at risk of becoming extinct throughout their range in the lower 48states," and the PA fails to adequately contribute their recovery, namely by omitting anymotorized route density standards outside the Ninemile DCA, and failing to identify or protect ormaintain areas of connectivity as we explain next.Figure 3. Start Points of Verified Observations of Female Grizzly Bears With Cubs.9090 Bader and Sieracki 2024. Ex. 5A. Connectivity AreasNinemile Demographic Connectivity Area-Bitterroot EcosystemThe Ninemile Demographic Connectivity Area must be expanded to connect all the way to theBitterroot and Cabinet-Yaak Recovery Areas, as shown in Figure 4. The Ninemile DemographicConnectivity Area for female grizzly bears was established in the Lolo National Forest PlanAmendment and is part of the NCDE Grizzly Bear Conservation Strategy (2018). In recent yearsthe Ninemile DCA has had verified observations of females with cubs in 2018, 2019, 2020 and2023 which has been counted for the Occupancy requirements under the Conservation Strategy.Figure 4. Expanding the Ninemile DCA to Connect All the Way to BE and CYE.Sells, et al. (2023) found this area to have the highest potential for female grizzly bearconnectivity and movement including in the area between the DCA and the BE. Bader andSieracki (2022) identified significant amounts of moderate-high probability denning habitat. Thearea also has valley bottom riparian habitat and extensive berry fields.The Ninemile DCA needs to be extended in three areas to connect all the way to the BitterrootEcosystem and Cabinet-Yaak Ecosystems which results in a total area of 2,204 km2. The existingDemographic Connectivity Area is 44.5% federal, 31.0% Flathead Indian Reservation, 5.5%state and 19.0% private lands and 10.1% is within Inventoried Roadless Areas and there iscontiguous roadless area on the Flathead Indian Reservation. The DCA additions are 59.7%federal, 16.7% state and 23.5% private lands and 18.4% is within Inventoried Roadless Areas.Cabinet-Yaak-Bitterroot Connectivity AreaThis connectivity area (3,447 km2) was identified as a possible connectivity habitat by the U.S.Fish and Wildlife Service (1993) warranting further analysis. It is 93.3% federal, 0.2% state and6.5% private lands and 33.2% is within Inventoried Roadless Areas. Bader and Sieracki (2022)found this connectivity area has suitable denning habitats and secure core habitats capable ofsupporting resident female grizzly bears. Sells et al. (2023) predicted this connectivity area hashigh connectivity potential for female and male grizzly bears. Grizzly bears have beendocumented using this connectivity area including Bear 927, the Kelly Creek bear that waskilled, Ethyl and others who have moved south of Highway 200 and I-90. The U.S. ForestService (2020) stated this area has grizzly bear habitat productivity equal in quality to that in theGrizzly Bear Recovery Areas.Sapphire-Pintler Connectivity AreaA significant portion of this connectivity area is located within the Lolo National Forest andlands administered by the Lolo National Forest in the Sapphire and John Long Mountains. TheSapphire-Pintler Connectivity Area (7,113 km2) has the highest potential for occupancy byresident breeding age female grizzly bears and has potential to support a small sub-population ofgrizzly bears due to nearly three-quarters of a million acres of roadless wildlands and proximityto the NCDE and BE (Bader and Sieracki 2022). It is 87.5% federal, 2.4% state and 10.1%private lands and 40.5% is within Inventoried Roadless Areas and Wilderness/WSA.The western edge of the Sapphires is within the highest connectivity category (Sells et al. 2023)and directly adjacent to abundant denning habitat. The Sapphire Mountains were also found tohave extensive ground cover by berry-producing species favored by grizzly bears (Hogg et al.2001) and also has the highest amount of secure core habitat of any connectivity area betweenthe NCDE, Bitterroot and Cabinet-Yaak Recovery Areas (Bader and Sieracki 2022).There have been numerous verified observations in this area including a female and 3 cubs nearGillespie Creek in the John Long Mountains, a male denned in the northern

Sapphires in2023-24, a male and female pair of siblings, a male near Stevensville, an adult female in 2015, amale around Miller Peak and several others including two males in the East Fork of theBitterroot. There have also been recent verified observations along both sides of Rock Creek inthe northern Sapphires on the Lolo National Forest (Montana Fish, Wildlife & Parks 2024).As per the recommendations of Proctor, et al. (2019) road densities must be reduced within andadjacent to key connectivity routes. For example, the current standard for Zone 1 of open roaddensity of 2mi/mi2 cannot sustain grizzly bears or elk. The non-existent road density standardsfor much of the western and southern portions of the Lolo National Forest is an unacceptablecondition.Appropriate Grizzly Bear Management Units must be identified and mapped for the entire LoloNational Forest, as shown below in Figures 5 and 6.91 This information must be, at a minimum,considered, and ideally adopted in the Revised Plan EIS in order to meet the agency's clearlylegal obligations to comply with the Endangered Species Act and the National ForestManagement Act.Figure 5. Proposed Grizzly Bear Management Units (North)Figure 6. Proposed Grizzly Bear Management Units (South)VI. Protection and Restoration of Watersheds and Fisheries - Bull TroutBull trout were listed as a threatened species under the Endangered Species Act (ESA) in 1999.92Throughout its range, bull trout are threatened by habitat degradation, fragmentation, andalterations associated with dewatering, road construction and maintenance, mining, grazing,blockage of migratory corridors, poor water quality, incidental angler harvest, entrainment, andnon-native species. "Despite recent progress in restoring bull trout habitat degradation, severalthreats to populations remain." RA at 175. The Forest Service explains that some contributingfactors are outside its control or cannot be address at the forest planning level, but explains thefollowing:However, continuing to reduce the effects of forest system road networks (i.e., undersizedculverts and road encroachment into streams and riparian areas) are threats () forest planscan provide components to address. Additional restoration of past mining damage instreams and overall enhancement of bull trout habitat on National Forest System land arealso appropriate issues for forest planning.Id. Given the LNF has over 9,000 miles of roads across the planning area, (RA at 312), wewould expect to see more information regarding where both system and non-system roads wereaffecting bull trout recovery, including road densities within 300 feet slope distance on eitherside of bull trout occupied streams and within bull trout critical habitat. In our comments on theDraft Assessment, we expressed concern with the omission of site specific, baseline conditions,poor BMP monitoring, and the reliance PIBO MP as a metric for watershed health. This was notaddressed in the RA. The lack of such information stems from the agency's abandonment of itsINFISH management direction that we strongly oppose.A. INFISH background and legal frameworkIn 1995, the Forest Service amended the Land and Resource Management Plans for 22 separateNational Forests, including the LNF, to incorporate the Inland Native Fish Strategy("INFISH").93 Forests within the inland range of bull trout adopted INFISH as an amendment,and it provided National Forest management direction for native inland fish and fish habitat inaccordance with the National Forest Management Act ("NFMA").INFISH constitutes a broad-reaching aquatic habitat conservation strategy for native trout,outside the range of anadromous fish in the Pacific Northwest, Northern and IntermountainRegions of the United States. INFISH was originally intended to serve as an "interim"management strategy for eighteen months until the agencies completed a more long-term,comprehensive management strategy. However, INFISH has still not been replaced with a moreeffective conservation strategy twenty-one years later.INFISH contains standards that guide forest management (i.e. timber harvest and silviculturaltreatments), motorized recreation, grazing, mining, fire and fuels management, land exchangeand acquisition, and other special uses to provide for sensitive inland fish species like bull trout.Key components of INFISH are Riparian Goals, Riparian Management Objectives (RMOs), andStandards and Guidelines. Standards and Guidelines include Riparian Habitat ConservationAreas (RHCAs), which are the portions of watersheds where agencies place primary emphasis onriparian-dependent resources and where management activities are subject to specific,measurable standards and guidelines.INFISH does not differentiate between "standards" and "guidelines," and they apply to allRHCAs and to projects and activities outside of RHCAs that are identified in the NEPA processas potentially degrading RHCAs. The management standards and guidelines maintain RiparianGoals in RHCAs in an effort to protect water quality, stream channel integrity, sediment regimeand other aquatic characteristics.The Forest Service adopted INFISH's interim management strategy on the 22 National Forests ina single Decision Notice. Then, in 1998, the U.S. Fish and Wildlife Service ("FWS") completedits INFISH and PACFISH ESA Section 7 consultation with the Forest Service and Bureau ofLand Management ("BLM"). This consultation resulted in a Biological Opinion that analyzedthe

impacts to bull trout that resulted from implementing both INFISH and PACFISH.94According to the 1998 Bull Trout Biological Opinion ("BO"), overextending INFISH slowsrecovery of bull trout and poses serious risks to the survival of the species:[i]ndefinite extension of PACFISH and INFISH aquatic conservationstrategies delays the recovery of bull trout and increases the risk that keypopulation segments will be irretrievably lost. The PACFISH and INFISHaquatic conservation strategies maintain a fragmented network of habitatsin degraded condition, where they presently exist, because they lack acomprehensive management strategy which protects and restores bull troutwatersheds. The interim direction does not provide adequate assurancethat future actions will not result in adverse effects to listed bull troutDPSs.In the Biological Opinion, FWS relied on the assumption that "[t]he species will persist, butmost likely not recover under [INFISH's] direction."96 Nevertheless, the Bull Trout BOultimately concluded that continued implementation of the land management plans was not likelyto jeopardize the continued existence of bull trout.97In addition to these deficiencies, at the time of the 1998 consultation no critical habitat had beendesignated for bull trout. Thus, the Bull Trout BO reasoned that because "[n]o critical habitat hasbeen designated for the species . . . . none will be affected."98 However, the ESA requires theForest Service to reinitiate consultation with FWS on the programmatic management plans whencritical habitat was designated for bull trout in 2010.99The 2010 rule designating critical habitat for bull trout acknowledged that the federal agencies"may need to reinitiate consultation on existing actions where they have continued discretionaryinvolvement or control if the activity may affect designated critical habitat."100 To be clear,although the Forest Service consulted with FWS and the National Marine Fisheries Service onthe effects of INFISH and PACFISH on the bull trout themselves and determined that theprogrammatic amendments would not jeopardize the continued existence of bull trout, theagencies never reinitiated consultation to determine whether INFISH and PACFISH woulddestroy or adversely modify bull trout critical habitat.Despite these issues with INFISH, it has continued to be the management benchmark for bulltrout for the last twenty-one years. However, instead of addressing these issues by strengtheningthe insufficiently protective management provisions from INFISH, the Forest's Draft Planinstead further weakens INFISH's protections, exacerbating the threats to both the survival andrecovery of bull trout and other native fish.B. The draft plan ignores and weakens INFISH's management direction.Despite INFISH's deficiencies, the Proposed Action provides even feebler protections for bulltrout and other at-risk aquatic species, which is why we urge that the current managementdirection and conservation strategies for the protection of bull trout and its designated criticalhabitat be included in all action alternatives of this forest plan revision. This includes INFISHand the U.S. Forest Service Bull Trout Conservation Strategy. INFISH provided a two-prongedmanagement approach that included both site-specific and broad-scale protections for bull trout.This draft plan uses a weaker, single prong approach that drops broad-scale protections andweakens site-specific standards for bull trout and designated critical habitat. Therefore, theproposed plan components result in a forest plan that is less protective of inland native fish andprovides less aquatic and riparian restoration opportunities than the existing forest plans do underINFISH. The proposed components remove many of INFISH's important management elements,selecting certain components and ignoring or diluting others. Chief among these is omitting theINFISH standards and guidelines that were applicable to all Riparian Habitat Conservation Areas("RHCAs"), which reflected a commitment to ecosystem management. Under the PA, the ForestService provides a bifurcation of the Riparian Management Zone (RMZ) into inner and outerareas. Here the PA would allow vegetation management within the inner zone to "to restore orenhance aquatic and riparian-associated resources." PA at 38, FW-RMZ-STD-02. Within theouter zone, such activities would be allowed as long as they were "designed to ensure theecosystem functions of the inner and outer RMZ are protected (managed within referenceconditions)." We appreciate the focus on protecting ecosystem function, however, the PA lacksthe requisite specificity to ensure projects meet these standards, which is why the currentINFISH standards need to be incorporated into the final Revised Plan.Further, the Riparian Goals outlined in INFISH establish an "expectation of the characteristics ofhealthy, functioning watersheds, riparian areas, and associated fish habitats." INFISH DN at A-1.These Riparian Goals are comprehensive and focus on ensuring the integrity of aquatic andriparian habitats to support species that depend on these habitats. Instead of providing specificRiparian Goals, the proposed direction provides primarily discretionary guidelines applicable toall waterways, even those designated as bull trout critical habitat and occupied by threatened bulltrout. For RMZs, the PA direction provides no goals and instead lists desired conditions thatassume management activities within RMZs.One reason the INFISH Strategy provides a better approach to contributing to the recovery ofbull trout,

and other at-risk aquatic species, is not only because of its focus on site-specificmeasures to protect the whole RMZ, but also because of its broader watershed focus, as we notedabove. Here the INFISH Strategy explains, "[s]ince the quality of water and fish habitat inaquatic systems is inseparably related to the integrity of upland and riparian areas within thewatersheds, The strategy identifies several goals for watershed, riparian, and stream channelconditions." INFISH DN at A-1. The INFISH Strategy encouraged National Forest managers toestablish site-specific Riparian Management Objective (RMOs) through watershed analysis, andprovided specific habitat features and objectives to direct management actions. Id. at A-3, 4.Under the PA, there appears to be no requirement to perform a watershed analysis to establishsite-specific objectives. Rather, the Forest Service provides the following objective:Improve soil and watershed function and resiliency on at least 4,000 acres every fiveyears, prioritizing this work within the CWN, Watershed Condition Framework (WCF)priority watersheds or municipal watersheds. Activities lead to measurable levels ofimprovement to the WCF metrics that are currently rated as 'at risk' or 'not properlyfunctioning.'PA at 34, FW-WTR-OBJ-02. The objective is weaker than the INFISH Strategy in that it doesnot list habitat features or RMOs to ensure site specific activities will result in actuallyimproving soil and watershed function or resiliency. Further, the Forest Service mustdemonstrate improvement activities across 4,000 acres every five years will actually measurablyimprove watershed function. Further, even if the agency could demonstrate such improvement,the objective is fundamentally flawed because it does not direct that improvement activities willbring the watershed into a status of functioning properly. This means the improvement could bemeasurable, but still minimal, and meet this objective. Further, the Forest Service cannot rely onthe PA's objective that directs managers to "[c]omplete all essential restoration work, asidentified by Watershed Restoration Action Plans, within at least one Watershed ConditionFramework (WCF) priority watershed every three to five years." While the WCF provides auniform approach for ranking watershed conditions, it is not without its flaws. (See Ex. 7 -Watershed Condition Framework Synopsis and Review). One flaw is that it allows managers tobring a watershed into a status of functioning properly upon completion of activities listed in aWatershed Restoration Action Plan, but it does not require monitoring of those activities toensure they successfully and measurably improve the condition class. Rather, it just assumessuccess. We see this same flaw in the PA where the Forest Service provides a standard requiringthe application of "[p]roject-specific best management practices[hellip]for controlling non-pointpollution sources to meet soil and watershed desired conditions and to protect beneficial uses."PA at 34, FW-WTR-STD-01. Certainly, the use of BMPs is a necessary condition for anysite-specific project, but the agency cannot arbitrarily assert they are, by themselves, the onlystandard necessary to sufficiently control nonpoint source pollution, let alone restore entirewatersheds to a properly functioning condition. That is one major reason why the INFISHStrategy is a better approach than the proposed action.Another reason to retain INFISH direction is that it better protects and restores watersheds thanthe Conservation Watershed Network (CWN) that is required under the 2012 Planning Rule. Ourcomments are meant to supplement the CWN, not replace it, given the regulation's requirements.INFISH required application of numeric RMOs in any and all watersheds occupied by inlandnative fish and where watershed analysis has not been completed, with the goal of achieving ahigh level of habitat diversity and complexity through a combination of habitat features, to meetthe life-history requirements of the fish community inhabiting a watershed. In contrast, it isunclear if the Forest Service proposes to prioritize conservation and preservation of bull trout andpure westslope cutthroat trout in a similar manner or only a specific subset of watersheds underits current version of the CWN. Specifically, the agency explains the following:Designation of a conservation watershed network, which should include watersheds thatare already in good condition or could be restored to good condition, are expected toprotect native fish and help maintain healthy watersheds and river systems.---Selection criteria for inclusion should help identify those watersheds that have thecapability to be more resilient to ecological change and disturbance induced by climatechange.---Many watersheds on the Forest that support the healthiest populations of native troutalready have their headwaters protected through NFS lands managed as inventoriedroadless areas, Congressionally designated wilderness, or as wild and scenic rivers. Thesespecial places are the building blocks of a conservation network as naturally functioningheadwaters have a large influence on the function of downstream stream reaches.RA, Appendix A4-6. A close reading of these descriptions suggest that CWNs include alreadyprotected watersheds and those that are in good condition or could be brought into goodcondition, but not those that are impaired. In other words, the CWN approach appears to writeoff certain watersheds as lost cause. Another flaw with the CWN approach is that it completelydiscards

the numeric RMOs from INFISH.C. The Revised Plan must include species-specific plan components to meet itsrequirements under the 2012 Planning Rule.The 2012 Planning Rule requires plans "include plan components, including standards orguidelines, to maintain or restore the ecological integrity of terrestrial and aquatic ecosystemsand watersheds in the plan area . . . ." 36 C.F.R. [sect] 219.8(a)(1). It also states that "If theresponsible official determines that the plan components required in paragraph (a) areinsufficient to provide such ecological conditions, then additional, site-specific plan components,including standards or guidelines, must be included in the plan to provide such ecologicalconditions in the plan area." Id. [sect] 219.9(b)(1).To be clear, the PA lacks sufficient standards orguidelines to significantly contribute to the recovery of bull trout, or to "maintain a viablepopulation of each species of conservation concern within the plan area." Id.In addition to addressing the deficiencies we described above, and including measurable INFISHmanagement direction, we also provide specific standards listed in the Citizen Plan. See Ex. 2.This includes those necessary to protect the Primary Constituent Elements of bull trout habitat:

* Fine sediments < 6.4 mm in diameter must be limited to less than 20% in spawning habitat (Espinosa 1996) and standards must be developed to maintain groundwater.
* All streams should average [ge] 90% bank stability and that cobble embeddedness in summer rearing habitat should be < 30% and < 25% in winter rearing habitats (Espinosa 1996). Additional indices include channel morphology including large woody debris, pool frequency volume and residual pool volumes.
* Stream temperatures in current and historic spawning, rearing and migratory corridor habitats should not exceed 6-8 C for spawning, with the optimum for incubation from 2-4 C (McPhail & Murray 1979); 10-12 C for rearing habitat, with 7-8 C being optimal (Goetz 1989); migratory stream corridors should be 12 C or less.
* Establish a total and open road density standard that protects and restores native fish habitat by reducing sediment, restoring hydrologic upwelling, eliminating barriers and removing failed culverts.

Climate change is expected to have serious impacts on bull trout (Bell et al. 2021). In the face ofclimate change, retaining thermal cover in headwaters areas is important to native fish (Kirk etal. 2022) and standards need to be set for thermal cover in Priority Watersheds that extend to theentire watershed (Frissell 1999).VII. Canada LynxIn regards to threatened species, as we noted, the Forest Service must provide plan componentsthat will contribute to the recovery of these species, including Canada lynx. 36 CFR 212.9(b).The need for additional and specific standards or guidelines stems from the fact that the agency'sfocus on maintaining or restoring the ecological integrity of lynx habitat is not sufficient toprovide the necessary ecological conditions for their recovery. Practices designed to protecthabitat have yet to show success, and as such additional plan components must be included thatbetter protect and restore lynx habitat. For instance, the Summary of BMER 2021 states, "Lynxhabitat is not limited on the Forest and management continues to follow practices to aid in therecovery of the lynx, however, lynx do not appear to be expanding their range on the Forestindicating more information is needed (p 3)."101 Yet the PA supports no more than business asusual with lynx, which is insufficient to contribute to lynx recovery.A. The Forest Service must address Revised Assessment deficiencies in the Revised PlanEISThe revised assessment made no changes to its draft regarding lynx nor did it provide roaddensity or connectivity information within lynx and snowshoe habitat. It would be difficult toassess the current conditions of lynx and lynx recovery on the Lolo National Forest (LNF)without this vital information. Saura et al 2014 found "the loss of intermediate and sufficientlylarge stepping-stone habitat patches can cause a sharp decline in the distance that can betraversed by species (critical spatial thresholds) that cannot be effectively compensated by otherfactors previously regarded as crucial for long-distance dispersal (p 1)." A thorough analysis ofbaseline conditions concerning road densities and connectivity of snowshoe hare and lynx habitatmust be completed in the EIS. Then, the effects of the proposed plan on road densities andconnectivity for lynx must be analyzed and disclosed.At the very least, the revised assessment could have clarified/corrected this sentence, "therevised plan will include plan components to support provide ecological these species asappropriate (emphasis added, RA chap 1, p 6)." What does this mean? What does "asappropriate" imply? Is it ever inappropriate to support biodiversity and protect listed species?B. The Forest Service must fully analyze the direct, indirect, and cumulative impacts offorest management on Canada lynxIn addition to addressing the Revised Assessment deficiencies, the Forest Service must take ahard look at how each alternative contributes to Canada lynx recovery. The RA states that lynx101 See Lolo National Forest 2021 Biennial Monitoring and Evaluation Report, Summary. Feb 2022https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd1000791.pdfonly occupy the

Seeley Lake District and "there is no evidence that lynx are currently expandingfrom the Seeley Ranger District to permanently occupy other areas of the Forest (chap 2, p160)."However, the agency acknowledges that "recent large fires may be shifting areas of occupancyacross the Southwest Crown of the Continent landscape (ibid p 160)" and that collared lynx havebeen documented in the Missoula Ranger District (ibid p 160). This information supports theneed for connected lynx habitat throughout the forest.The climate is warming, and the agency's overly aggressive vegetation management meant toreduce wildfire risk is likely exacerbating the loss of lynx habitat and their shifting range. Lynxwill need refuge and the ability to move through islands of habitat to persist. According toRuggiero, 1999:Dispersal to distant islands from other islands with small populations is unlikely, andeven successful dispersal frequently will not result in successful colonization. Populationsize, distance, and barriers to dispersal between islands are therefore critically importantto the stability of the metapopulation, it is therefore critically important to maintain orincrease the carrying capacity of all areas capable of supporting lynx. (emphasisadded, p 452).The EIS must map, consider, and disclose lynx and snowshoe hare habitat on the LNF andpropose actions that would preserve these areas of habitat. In doing so, it must specifically defineoptimal habitat for lynx.The EIS must analyze and disclose the historic range of lynx habitat components as comparedwith current conditions.Newmark et al., 2023 states, "Many protected areas worldwide increasingly resemble habitatisolates embedded in human-modified landscapes. However, establishing linkages amongprotected areas could significantly reduce species loss rates (p 1)." The LNF is withinNewmark's map of multi-species linkages, Wilderness, and ungulate migratory routes betweenYellowstone and Glacier National Parks (see Figure 7).[Intentionally Left Blank]Figure 7. Location of identified multi-species linkages, and wilderness areas and ungulatemigratory routes that intersect linkages between Yellowstone and Glacier park assemblages inthe northern Rocky Mountains.The Revised Plan EIS must analyze the role of the LNF within a larger connectivity frameworkfor all species including lynx and create restrictions to protect linkage areas. According toNewmark, 2023:Additionally, non-physical anthropogenic barriers that alter or prevent mammal dispersal andmovement through identified linkages on public lands would need to be carefully managed.Seasonal closures, user quotas and regulations, and restrictions on mechanized andnon-mechanized recreation are approaches that public land-managing agencies are currentlyimplementing to protect wildlife and critical habitat in portions of the identified linkages (p7).This would parallel CEQ guidance for connectivity mentioned in our comments when we statedthat DA's connectivity analysis is inadequate because it does not consider forest roads and theirrole in fragmenting habitat and impairing current connectivity. Only 3 areas were suggested forcrossing structures on state and federal roads. Many more are necessary.The RA did an analysis of connectivity for groups of species which helps with overallconnectivity and is a start at analyzing the overall connectivity. However, it is inadequate foranalysis of specific animals like lynx. It does not consider the specific habitat needs of lynx andhow those components are connected or must be connected on the LNF.Each alternative must include specific and measurable parameters that demonstrate maintainingconnectivity for lynx and a definition of what maintaining connectivity means.There is much work to be done in the EIS to ensure the recovery of lynx in the Lolo NationalForest Plan Revision. Efforts must go well beyond the Northern Rocky Mountain LynxManagement Direction (NRLMD) and must include specific, measurable standards to ensure thepersistence of this threatened species.The EIS must fully consider and disclose the strategies for both lynx and wolverine proposed inWisdom et al 2000 (page 247-248) which include:

* Provide large areas with low road density and minimal human disturbance
* Manage human activities and road access to minimize human disturbance
* Manage lynx and wolverine in a metapopulation context with adequate links among existing populations
* Monitor
* Provide areas of high quality lynx habitat protected from human disturbance
* Develop travel corridors and landscape connectivity to allow populations to interact
* Limit increase in competing predators in occupied areas
* Identify high quality habitat with low road densities and manage them as the "backbone of a metapopulation strategy.

The EIS must analyze the effects of roads both open and closed and illegal use on lynx and lynxrecovery. Wisdom et al 2000 stated in their abstract:Our analysis also indicated that >70 percent of the 91 species are affected negatively byone or more factors associated with roads. Moreover, maps of the abundance of

sourcehabitats in relation to classes of road density suggested that road-associated factorshypothetically may reduce the potential to support persistent populations of terrestrialcarnivores in many subbasins.The EIS must analyze how forest roads facilitate legal and illegal trapping by forest roads.Wisdom et al 2000 states:Trapping can be a significant source of mortality for lynx (Bailey and others 1986,Carbyn and Patriquin 1983, Mech 1980, Nellis and others 1972, Parker and others 1983,Ward and Krebs 1985). Trappers are capable of removing from 60 to 80 percent of theindividuals in a given lynx population (Bailey and others 1986, Parker and others 1983).Incidental takes of lynx during bobcat and coyote trapping seasons may be cause forconcern, especially with low-density lynx populations. p. 246The EIS must analyze and disclose direct, indirect, and cumulative impacts of recreationalactivities including winter and summer motorized use on lynx and their recovery. This mustinclude a look at how winter recreation affects competition. Ruggiero et al., 1999 found,"Coyotes appear to be especially effective competitors with lynx in human-dominatedlandscapes[hellip]. Based on research in the North, humans facilitate coyote access into areasoccupied by lynx by compacting snow with snowmobiles, snowshoes, or skis (p 450)." They alsofound that " interactions with coyotes appear to influence lynx more than availability ofsnowshoe hares (ibid p 91-92)." Guillaumet et al., 2015 also found, "coyotes may limit thenumerical tracking of hare by lynx through exploitation or interference competition (p 142)."The EIS must analyze and disclose the effects of land management activities including increasingtimber production and increasing land available for timber production on lynx and lynx recovery.The RA claims the population in the Seeley District is "stable." Stable in not recovery.The Forest Service states, "Lynx are at additional risk due to large-scale habitat loss associatedwith changing disturbance regimes and increased fire activity." RA at 160. This does notconsider the effects of land management as a disturbance mechanism. On page 162, the RAadmits, "The primary stressors to the persistence of Canada lynx in the Northern Rockies areclimate change, vegetation management, wildfire and habitat fragmentation (Interagency LynxBiology Team 2013)."The Forest Service assumes the NRLMD will mitigate effects of land management activities onlynx. But no evidence is provided in the RA that demonstrates the efficacy of the NRLMD. Thepopulation in Seeley has not increased and lynx are not populating other areas since the adoptionof the direction. With an increase in proposed timber production and areas suitable for timberproduction, will the NRLMD conserve lynx?Even the USFWS Species Status Assessment (SSA) expressed doubts as to whether the NRLMDis effective. "Although uncertainty remains about the efficacy of this improved regulatoryframework (p 231)." It also expresses concerns about the lack of monitoring of populationtrends. The 2023 Addendum to the SSA also points out uncertainty and assumes that thedirectives are benefiting lynx, but no evidence is provided. Again, it mentions the lack ofeffective population monitoring. The RA offers no detailed monitoring of population trends. Infact, the recent changes to biennial forest monitoring focus on distribution rather than populationtrends.The NRLMD also assumes that clearcutting/regeneration logging have equivalent temporaleffects to a stand replacing fire. But Vanbianchi et al., 2017, who found, "Lynx used burned areasas early as 1 year postfire, which is much earlier than the 2-4 decades postfire previouslythought for this predator (p 1)." And Holbrook 2018 found:Our analyses indicated that Canada lynx used treatments, but there was a consistent costin that lynx use was low up to [sim]10 years after all silvicultural actions. However,cumulative use (in both winter and summer) by lynx reached 50% at [sim]20 years after athinning treatment, whereas it took [sim]34-40 years after a selection or regeneration cut.This indicated that Canada lynx used thinnings at a faster rate post-treatment thanselection or regeneration cuts, and that lynx used selection and regeneration cuts in asimilar fashion over time (p 114).Note that Holbrook considers "thinning" as the removal of small diameter trees (10 inches dbh).These reports do not support the idea that land management activities have the same effects aswildfire as far as lynx are concerned. These studies show that land management activities havegrave effects and displace lynx for decades.The Forest Service cannot rely on NRLMD direction to support the recovery of lynx, but that iswhat it does. There is no recovery plan for lynx and the NRLMD has no specific definition oflynx habitat other than 30% openings in an LAU. But Kosterman et al 2014 found, that 50% oflynx habitat must be mature undisturbed forest for it to be optimal lynx habitat where lynx canhave reproductive success and no more than 15% of lynx habitat should be young clearcuts, i.e.trees under 4 in. dbh. Young regenerating forest should occur only on 10-15% of a female lynxhome range.The Forest Service must include a specific and measurable definition of optimal lynx habitat andstrategies for maintaining that habitat, and use that definition to compare alternatives in theRevised Plan EIS.C. The Forest Service must include plan components that effectively contribute to Canadalynx recoveryAccording to the proposed action, the desired condition for Lynx

is, "Forests representing adiversity of seral stages occur at spatial scales and arrangements that support lynx occupancy anddispersal. Essential lynx habitat elements are common and well distributed at spatial scalesrelevant to supporting the physiological, behavioral, and life history needs of lynx (chap 2, p45)."What is the definition of diversity of seral stages, spatial scales, and arrangements that wouldsupport lynx occupancy? What percentages are optimum? What are the essential lynx habitatelements, what is the definition of common, what does "well distributed" mean? The ForestService must define these conditions with specific, measurable criteria. Without specifics, thereare no means to adequately assess and monitor effects of the proposed plan and future actionsallowed by the plan on lynx recovery.The plan must include specific and measurable standards to provide for the recovery of lynx andother listed species. The words "as appropriate" should not be used. It is always appropriate toprotect listed and sensitive species. It is always appropriate to support biodiversity by protectingspecies. In fact, the RA states, "The revised plan must provide for the persistence of all nativespecies in the plan area (chap 1, p 7)." The Forest Service must replace vague and general termswith specific, measurable standards. In fact, we asked for road density standards and connectingisolated core habitat for grizzlies:Within connectivity areas, Open Motorized Route Density should be limited to 1mi/mi2which will require targeted road closures and decommissioning. Within the roaded matrixlands, road decommissioning should be focused on increasing secure core area size, toconnect isolated secure core areas and to better represent different habitat types andseasonal food sources within secure core.Ex. 3 at 22. This would also benefit lynx. Yet, no considerations of road densities andconnectivity for lynx were considered in the revised assessment or included in the PA. At aminimum, the Forest Service must identify and provide plan components that provide for lynxconnectivity, to which the information from Sells et al 2023, and Newmark 2023 may proveuseful to inform this effort. In any alternative, the Revised Plan must include standards toprovide for and promote connectivity. Further, it must include a detailed monitoring program tomeasure population trends and the efficacy of conservation efforts.VIII. Whitebark PineA. The Forest Service must fully analyze the direct, indirect, and cumulative impactsof forest management on whitebark pineIn our Draft Assessment comments regarding whitebark pine, we noted numerous areas wherethe agency must provide additional information and analysis. Here we expand on thesecomments, which the Forest Service must address in its Revised Plan EIS in order to complywith NEPA and to support the Revised Plan components.The first step in restoring whitebark pine (Keane et al., 2017) is to: "Assess conditions. Conductassessments that document the status and trend of whitebark pine forests within regions." Yet,both the Draft and Revised Assessment (RA) of the LNF Land Management Plan give only ageneral overview of whitebark pine without any discussion of the specific conditions on LNF,oversimplifying the complexity, variability, and heterogeneity of whitebark pine ecosystems.Larson and Kipfmueller (2012) state:Generalizations about the decline of this species do little to improve our overallunderstanding of whitebark pine communities and are difficult to translate intomanagement actions[hellip] A more nuanced perspective is critically important for directingmanagement and restoration activities in whitebark pine communities, lestgeneralizations blur recognition of the mechanisms driving declines of this singularspecies and lead to more harm than good.The RA makes a number of assumptions about whitebark pine conditions that may not apply toLolo National Forest because specific conditions are unknown. There is a wide body of literatureon whitebark pine, summarized by the USFWS (87 FR 76882), Keane et al (2017), Larson andKipfmueller (2012), and USFWS (2023). Further, although the RA Map A1-29 showsoccurrences of whitebark pine on LNF, no detailed information is available. How was thisinventory conducted[mdash]by field surveys or by remote sensing or by modeling? How accurate isthe inventory? Are the whitebark pines in pure stands or mixed with other species? What are agedistributions in each area? What is the health of each stand? What are the main stressors in LoloNational Forest? Are the trees cone-bearing? Where do rust-resistant "plus" trees exist? What isthe degree of connectivity between whitebark pine stands? Tomback et al (2022) distinguishedtwo types of WBP communities: Seral stands common in the northern Rockies and climax orself-reproducing stands common in the Pacific Northwest that are not fire-dependent. Which areLNF's WBPs? Do both occur, depending on their specific location? An assessment and EIS thatanswers these questions is necessary before a land management plan that will preserve andrestore whitebark pine can be developed, which is step #2 in Keane et al. (2017).The Forest Service contradicts much of the recent science in its RA. For example:

* RA states: Management actions to improve integrity can include the planting or seeding of blister rust-resistant stock to a small degree and thinning to reduce competition. However, Six et al. (2021) concluded that "in cases

where planting is required, care should be used in sourcing seed, as even locations close to one another may not be appropriate for collections"
* RA states: There are greater restoration opportunities associated with prescribed fire and benefits from wildfire to create suitable sites for regeneration. However, recent literature is conflicted and uncertain about the effects of fire. Keane et al (2020) reported high WBP mortality in many prescribed burns because WBPs thin bark make it especially susceptible to damage from even a low-intensity surface fire. USFWS (2023) stated "conditions under which the species is most likely to survive such fires remains largely unknown". Six et al. (2021) found "that thinning prescriptions aimed at increasing tree growth in whitebark pine should be applied with considerable caution. In our study, as well as in that of Kichas et al. (2020), faster overall growth was the strongest predictor of mortality due to mountain pine beetle (MPB), indicating that such treatments will not have their intended effect in P. albicaulis and may even be detrimental." Keane et al (2017) recommended avoiding "treatments designed only to reduce disturbance agents, such as fuel treatments. Embrace a holistic wildland fire policy that balances losses with gains in competition-free burned areas". Tomback et al (2022) described two types of WBP communities: Seral stands common in the northern Rockies and climax or self-reproducing stands common in the Pacific Northwest that are not fire-dependent, and seral stands common in the northern Rockies that may be dependent on fire. LNF includes both moist Pacific Northwest climates and drier northern Rockies climates.
* RA states: The natural selection process for resistance traits is occurring too slowly given the influence of other stressors that cause the loss of viable seed trees. Six et al. (2021) disagreed, saying "To protect the ability of this tree to adapt to current and future conditions, the maintenance of genetic diversity should be a top priority, and practices that can reduce diversity or that may introduce maladaptive genes or swamp local adaptation should be avoided. Reliance on natural regeneration is best because it involves locally adapted seed sources drawn from the full array of diversity present in the stand and seedlings that establish will have done so under a local climatic selection filter."
* RA states: A century of fire suppression has allowed shade-tolerant species to outcompete whitebark pine and change the fuel profile. There is an increased fire frequency and shift to higher severities in forests where Engelmann spruce and subalpine fir have become prevalent. However, Larson and Kipfmueller (2012) concluded "the implication of fire suppression as a widespread cause of declines of whitebark pine communities may be inaccurate for much of the range of the species and could result in misguided restoration efforts". Similarly, the whitebark listing on the Federal Register (2022) states "we do not know at what scale the impacts of fire exclusion and resultant forest succession have affected whitebark pine".
* RA states: "Bark beetle outbreaks have become widespread due in part to warming temperatures which results in lower winter mortality of beetles and increases reproduction rates. The homogeneity of neighboring lodgepole pine forests in some places has led to outbreaks which can "spill" into whitebark pine forests." In contrast, Larson and Kipfmueller (2012) said: "Suggestions that the current mountain pine beetle outbreaks are unnatural must be firmly placed within the context of the extremely short historical record relative to the pace of forest dynamics in whitebark pine communities[hellip]beetle outbreaks may play roles equal in importance to fire in creating suitable sites for whitebark pine regeneration." USFWS (2023) suggests that removing other species, such as lodgepole pine, that are preferred by mountain pine beetle, may increase whitebark pine susceptibility to MPB during outbreaks, calling into question the benefits of silvicultural and prescribed burning. Furniss and Renkin (2003) found the assumption that mountain pine beetle outbreaks spread from lower lodgepole forests into higher whitebark forests may be false, and that the opposite might be true.
* RA, p. 124, states: "Climate change is an overarching stressor that exacerbates the other stressors described and directly impacts whitebark pine whose competitive advantage relies on its ability to survive cold temperatures at treeline." But the effects of climate change on whitebark pine are still largely unknown, as summarized by Larson and Kipfmueller (2012): "The net effects of climate change may be negative for whitebark pine as a species, yet even here uncertainty and heterogeneity exist. As winter temperatures warm, much of western North America will experience lower snow packs and overall drier conditions, particularly through earlier snowmelt and more intense late season droughts (Barnett et al. 2008). Drier conditions may limit the spread of blister rust spores and result in an overall reduction in the effects of this disease on whitebark pine communities (cf. Boland et al. 2004). Drier conditions are also expected to result in increased fire frequency and severity in subalpine forests (Fagre et al. 2003; Westerling et al. 2006). This may, in effect, counter any effects of fire suppression that

do exist and result in a greater abundance of recently burned sites that are amenable to whitebark pine regeneration, depending on the severity of fires and their areal extent." Demonstrating just how little is known about climate change's effects on whitebark pine is a study by Flanary and Keane (2019) that found that whitebark in southwest Montana had expanded to lower elevations, with no evidence that it was moving upward as expected from climate change.

* RA, p. 125, states: The expected trend of this ecosystem is a continued decline, except for areas where active restoration occurs (e.g., prescribed fire and planting of stock that is genetically resistant to white pine blister rust)[hellip].Genetic depression increases the need for active restoration activities to increase the population. However, the benefits of the proposed active restoration activities are still speculative and could do more harm than good. Six et al. (2021) concluded that maintaining genetic diversity is most important, and "in cases where planting is required, care should be used in sourcing seed, as even locations close to one another may not be appropriate for collections". Larson and Kipfmueller (2012) state "the implication of fire suppression as a widespread cause of declines of whitebark pine communities may be inaccurate for much of the range of the species and could result in misguided restoration efforts". Keane et al (2020) reported high WBP mortality in many prescribed burns because WBP's thin bark make it especially susceptible to damage from even a low-intensity surface fire. USFWS (2023) "conditions under which the species is most likely to survive such fires remains largely unknown". The Proposed LNF Management Plan places WBP pine in fire regime V, with fire return intervals of 200+ years; burning at mostly high severity but can include low and moderate severity (p. 190). This suggests that the Forest Service's focus on reducing severe wildfires in WBP habitat is not only ineffective, but will run counter to the agency's own predicted fire-return intervals

Overall, the Forest Service must recognize and address that its current management approachesare not only uncertain and scientifically controversial, but that they may actually be increasingthe loss of whitebark pine. Specifically, the objective of current silvicultural treatments is to usemechanical cutting, prescribed fire, and daylighting to remove competing, faster-growingconifers in successionally-advanced stands and promote natural regeneration by providing openareas for Clark's nutcracker seed caching. However, daylighting, mechanical thinning, andprescribed burning are largely unproven, and may do more harm than good (Campbell andAntos, 2003; Kichas et al, 2020; Keane et al 2020; Larson and Kipfmueller, 2012; Tomback,2022; Six et al, 2021; Shoettle et al, 2022; USFWS, 2023). In addition, Lorenz et al (2011) foundthat Clark's nutcrackers choose locations with minimal snow cover by caching seeds at thelowest available elevations in their home ranges, by caching 85% of seeds cached above groundin trees, and by caching the other 15% in the ground but mostly under tree canopy. The RA failsto properly consider this recent science, which the Forest Service must address in its RevisedPlan EIS.B. The Forest Service must include plan components that effectively contribute to whitebark pine recoveryThe Forest Service offers a few desired conditions, objectives and guidelines meant to contributeto the recovery of the species, but they are insufficient to meet this requirement and the agencyfailed to include any protective standards. The Forest Service proposes Objective 02: "Treat 300acres per year, measured as an annual average on a decadal basis, for the purpose of sustainingor restoring whitebark pine." PA at 44. Yet, as we explained above, the vegetation managementdiscussed in the RA are experimental, and the PA lacks sufficient monitoring and adaptivemanagement provisions to test whether treatments are performing as expected and for unintendedconsequences (Tomback, 2022). How will these treatments be monitored?Further, the PA includes the following WBP guidelines (p. 44):

* Guideline 04: When conducting management activities in whitebark pine stands, project-level design criteria should be designed to support the recovery of whitebark pine.

The Forest Service must analyze any management activities in WBP using on-the-ground fielddata and best available science. All WBP management proposals must provide for post-projectmonitoring and adaptive management.

* Guideline 05: To support the recovery of whitebark pine, management in areas with mature trees with rust resistance or in healthy, unsuppressed regenerating stands should only be authorized for the purpose of improving the health and resilience of whitebark pine.

The agency must direct that any analysis of management activities in WBP use on-the-groundfield data and best available science. All WBP management proposals must ensure post-projectmonitoring and adaptive

management.
* Guideline 06: To protect at-risk plant species not adapted or resilient to fire, prescribed fire treatments should either avoid occupied habitat or include other design features that reduce potential loss.
The Forest Service must acknowledge that WBP itself may not be adapted or resilient toprescribed fire (Keane et al, 2020; USFWS, 2023).Should the Forest Service continue to rely on these plan components, it must demonstrate in theRevised Plan EIS that they will actually contribute to whitebark pine recovery, and also to whatextent that contribution will actually support its recovery. Further, the proposed guidelinescontinue to rely on vague language that lack definitions that can be operationally applied at theproject-level. For example, what is the definition of "improving health." To be clear, the Lolo NFis not sick, it is not a patient in a hospital and the medicalized terminology is not applicable toforest lands. Rather, the 2012 Planning Rule appropriately uses terms based in science, such asecosystem integrity and diversity. The Revised Plan must include clearly defined and operationalcomponents that allow for measurable habitat protections and improvements where necessary. Tothe extent that the agency relies on "design features" to meet its objectives, those need to beclearly defined with evidence that shows they are not only effective, but that the Forest Servicehas the ability to ensure proper implementation.In sum, the Forest Service must recognize that the science of whitebark pine ecology andmanagement is complex, geographically variable, and rapidly evolving. The RevisedAssessment, EIS and LNF Management Plan must include a detailed assessment and inventoryof whitebark pine on LNF. The LNF Management Plan must ensure that management activitiesin WBP be analyzed using site-specific field surveys and all available science. LNF ManagementPlan must ensure that all management activities in WBP are monitored and that monitoringresults are used in adaptive management. Because knowledge of whitebark pine ecosystems ischanging so rapidly, the LNF Management Plan should place LNF's whitebark pine ecosystemsin a Management Area (MA) of their own.IX. WolverineA. The revised forest plan must provide for the ecological conditions necessary to "contribute to the recovery" of wolverineOn November 30, 2023 the U.S. Fish and Wildlife Service officially added the species asthreatened "for the distinct population segment (DPS) of the North American wolverine (Gulogulo luscus) occurring in the contiguous United States. This rule adds the contiguous U.S. DPSof the North American wolverine to the Federal List of Endangered and Threatened Wildlife." 88FR 83726. However, when the Revised Assessment was finalized just one month earlier,wolverines were still considered "proposed" in the agency's analysis. RA at 159, 167. As such, itis unclear if the agency's assessment properly evaluated forest conditions through the lens ofwolverine recovery as opposed to conserving a candidate species, a distinction made in the 2012Planning Rule. 36 C.F.R. [sect] 219.9(b)(1). This disconnect may have contributed to the ProposedAction's lack of specific standards or guidelines that will contribute to the recovery of wolverine.The Forest Service's 2012 planning rule tasks the LNF with the duty to determine whether or notthe ecological components included in the revised plan - including whether the proposedstandards, objectives, desired conditions, and guidelines - provide the ecological conditions orsite-specific components necessary to "contribute to the recovery" of listed species likewolverine. 36 C.F.R. [sect] 219.9 (b). Recovery means providing the ecological componentsnecessary to improve the status of a listed species to the point at which listing under theEndangered Species Act ("ESA") is no longer appropriate. Id. Further, "[i]f the responsibleofficial determines that the plan components required in paragraph (a) are insufficient to providesuch ecological conditions, then additional, species-specific plan components, includingstandards or guidelines, must be included in the plan to provide such ecological conditions in theplan area." Id.This duty to contribute to the recovery of wolverine, therefore, must be the focus of the RevisedPlan and must drive and inform all management decisions concerning the species. Providing forthe persistence and survival of wolverine is insufficient; the Revised Plan must go further andprovide ecological conditions necessary to "contribute to the recovery" of the species.As it stands, the Proposed Action lacks the necessary direction to meet this requirement as itcontains just one plan component: "Suitable wolverine material habitat is widely dispersedthroughout the forest and includes locations with limited disturbance from winter recreation." PAat 45, FW-WRISK-DC-07. The proposed desired condition is insufficient to ensure the revisedplan will contribute to wolverine recovery. At a minimum, it must include both primary andmaternal habitat, and separately there must be a desired condition that will ensure wolverineshave habitat security in areas of connectivity and to protect food sources. Further, the RevisedPlan must have corresponding standards or guidelines, and we strongly recommend including astandard that will protect maternal and primary habitat from winter motorized use. In fact, theRevised Plan should include a determination that these areas are

not suitable for OSVdesignations. It should also include a standard that protects maternal habitat from concentratednon-motorized winter recreation, such as groomed ski trails. This is especially important giventhat "[f]or wolverine, the availability of persistent spring snow is an important component ofdenning ecology, and projections of spring snowpack suggest large-scale reductions over the next50-100 years." RA at 160.B. The LNF needs to collect the necessary data on wolverine population (actual and trend), presence, denning, and movement across the forest.The Forest Service disclosed that "[w]hile anecdotal observations of wolverine on the LoloNational Forest are relatively common, population-level information across the plan area isunavailable. Relying on anecdotal information or other sources such as trapping reports is notsufficient to inform or monitor for wolverine population trends. In order to effectively conserveand manage for wolverine on the LNF, the Forest Service must first acquire and map informationon the local population (actual and trend), where wolverine reside and are denning (bothmaternal and natal), and where they are traveling/moving within the forest. Certainly the ForestService can use available methods and models to clearly define and map wolverine habitats andrange within the forest such as those discussed in Copeland (2010) and Inman (2013), but suchthe Forest Service must show how these models inform current populations and trends over thelife of the Revised Plan while also adjusting the results to account for projected habitat changesdue to the climate crisis. In addition, the Revised Plan must include specific monitoring directionthat can allow for population trend analysis to demonstrate it is actually contributing towolverine recovery.C. The Forest Service must fully analyze the direct, indirect, and cumulative impacts of forest management on wolverine.The Forest Service must analyze the direct, indirect or cumulative impacts on wolverine denning,primary and dispersal habitat from human disturbance, specifically winter recreational activities.As noted above, the PA lacks the necessary plan components to adequately protect maternaldenning and primary habitat from human disturbances, which is a reflection of the cursoryevaluation provided in the Revised Assessment that failed to account for the findings in theUSFWS's Wolverine Species Status Assessment Addendum, 2023 (2023 SSA).The best available science reveals that motorized winter recreation poses a threat to wolverinepersistence and recovery, especially within the context of the climate crisis. Yet, the ForestService fails to acknowledge the threat:Climate change, the inadequacy of existing regulatory mechanisms to climate change,harvesting, trapping and small population size were identified as the primary andsecondary threats to the continuous wolverine distinct population segment per the U.S.Fish and Wildlife Service five factor analyses1 (U.S. Department of the Interior 2013a)(Table 25).---The U.S. Fish and Wildlife Service also analyzed four categories of human disturbance aspart of their rulemaking process. This included: (1) Dispersed recreational activities withprimary impacts to wolverines through direct disturbance (e.g., snowmobiling andheli-skiing); (2) disturbance associated with permanent infrastructure such as residentialand commercial developments, mines, and campgrounds; (3) disturbance and mortalityassociated with transportation corridors; and (4) disturbance associated with landmanagement activities such as forestry, or fire/fuels reduction activities. These were notfound to be a threat to the wolverine distinct population segment (Table 25).RA at 168-69. However, upon listing wolverine as a threatened species, the USFWS explainedthe following:In the 2023 wolverine SSA report addendum, we provide an updated assessment of theeffects of winter recreation based on new studies. Research indicates winter recreation isnegatively associated with North American wolverine habitat use, and that winterrecreation is likely to increase and become more concentrated in the future assnow-covered areas decline due to climate change (Heinemeyer et al. 2019, p. 1). A largemulti-State analysis of winter recreation impacts in the Northern Rocky Mountains waspublished in 2019, indicating greater concern for impacts to wolverines than we found in2018 and showing a negative functional response to the level of recreation exposurewithin their home ranges (Heinemeyer et al. 2019a, pp. 13-14, 17-18). Additionally, newresearch found an incremental loss of wolverines in portions of central Idaho wherewinter recreation impacts are increasing (Mack and Hagan 2022, p. 13). Furthermore,forest roads used by snowmobilers in the Canadian Rockies were found tohave a strong negative correlation with wolverine distribution (Kortello et al. 2019, p.10). Wolverine detection probability in protected and nonprotected habitat ofsouthwestern Canada was found to be strongly and negatively correlated withnonmotorized recreation in summer and winter (Barrueto et al. 2022, p. 5).88 FR 83729. The Forest Service must provide an analysis that accounts for shrinking wolverinehabitat or concentration of uses or adjust the habitat models to include the scarcity of snowpackover the life of the Revised Plan. In particular, the agency explains in performing its wolverineassessment that it that "Mapping of predicted wolverine habitat in the Northern Region of theForest Service is based on the work of Inman et al. (2013), which used

radio-telemetry datacollected in the Yellowstone Region of the United States and Resource Selection Functionmodelling." RA at 168. Certainly, the model provides important information about the likelywolverine habitats at the time of the study, but it does not account for current or projecteddeclines in snowpack due to the climate crisis, and as such, the Forest Service must adjust themodel results or provide an alternative method to account for such declines. The Forest Serviceneed not go far to find an alternative method as the FWS provided snowpack and snow coverprojections in its 2023 SSA, explaining:Snow projections were performed over five modeling domains in the U.S. RockyMountain and Cascades ranges by researchers at the University of Colorado, Universityof Maryland, and NASA Goddard Space Flight Center (collectively) at the request of theUSFWS. These modeling domains were selected to overlap with occupied and potentialwolverine habitat in the contiguous U.S. across latitudinal, longitudinal, and elevationgradients.2023 SSA at 49. The Forest Service must integrate these model results with its analysis onavailable wolverine habitat in order to better understand how each alternative in the Revised PlanEIS will affect wolverine recovery, the importance of which the FWS explains:Wolverine habitat in the contiguous U.S. is projected to decrease in areas that weremodeled and become more fragmented because of climate changes that result inincreasing temperatures, earlier spring snowmelt, and loss of deep, persistent springsnowpack, primarily at lower elevations (see Climate Change Effects section above).Winter recreation, which has been shown to negatively influence wolverine behavior, inthese diminished habitats may increase as human populations increase (U.S. ForestService 2016, pp. 12-13, 12-14). In addition, snow-dependent recreation that wasformerly distributed over a wider elevation gradient will be constrained to that part of thegradient that contains quality snow into the future.2023 SSA at 64. Given this, it is crucial for the Forest Service to fully analyze the loss of winterwolverine habitat from current or projected OSV use, or the potential impacts to wolverine foodavailability or cover. This is particularly important in the transition zones where a model utilizedin Aubry et al. 2023 found that "wolverines are restricted primarily to the transitional zonebetween treeline, below which environmental conditions become too warm, and upper elevationsof permanent ice and snow where there is insufficient food and cover to support wolverines(Aubry et al. 2023, pp. 13-14)." 2023 SSA at 18. Further, "[t]here is growing evidence thatwolverines rely on subnivean space (the environment between snow and terrain) forthermoregulation, to escape predation risk, and/or to cache food (van der Veen et al. 2020, pp.8-10; Fisher et al. 2022, p. 10)." 88 FR 83748. The Forest Service must account for the loss orshifting of transition zones or subnivean spaces in its analysis, and account for OSV use withinthese areas.In fact, essential sources of wolverine prey reside within the subnivean space. Small mammalsthat remain active during the winter depend on the insulated space between the snowpack and theground - the subnivean zone - for winter survival. When snow compaction from snowmobilesoccurs, subnivean temperatures decrease, which can lead to increased metabolic rates in thesesmall mammal species, such as voles, shrews, and mice. For example, if the subnivean air spaceis cooled by as little as 3 degrees Celsius, the metabolic demands of small mammals living in thespace would increase by about 25 calories per hour. Neumann and Merriam, 1972. Throughcontrolled experiments, researchers have demonstrated that compaction due to snowmobile usereduced rodent and shrew use of subnivean habitats to near zero - a decline attributed to directmortality, not outmigration. Jarvinen and Schmid, 1971. Elsewhere, scientists have documented adecline in small mammals following snowmobile activity that compressed the subnivean zone.Sanecki et al., 2006. Because small mammals make up the majority of prey for many species, fromraptors to mesocarnivores, habitat changes that affect subnivean populations could cascadethrough the food chain. Brander, R.B. 1974. The Forest Service must address this important issuein its analysis.Additionally, the best available science reveals that motorized winter recreation poses a threat towolverine persistence and recovery, in addition to the threats posed by climate change. Aswolverines lose habitat to the effects of climate change, wolverine and motorized winterrecreationists will be forced to share smaller and smaller habitat patches. Heinemeyer, et al.2019. Decreasing areas with sufficient snow will amplify the effect of motorized winterrecreation on wolverine due to the fact that motorized winter recreation will be concentrated insmaller areas on the LNF. The Forest Service cannot rely on currently protected areas alone toprovide for all of the wolverine's life history requirements.Further, the Forest Service must account for any take of wolverine as defined in the ESA. Factorsaffecting the wolverine's continued existence include projected decrease and fragmentation ofwolverine habitat and range due to climate change, lack of secure habitat allowing forconnectivity, trapping, lack of regulatory mechanisms to address the threats to wolverine habitatfrom climate change, and loss of genetic diversity due to small population size. A recent studyexpands on

these threats explaining:Modeling suggests snow in wolverine range in the USA and southern British Columbiawill diminish markedly in the coming century (McKelvey et al., 2011a). Projectionmodels based on climate-change scenarios suggest a marked reduction of persistentspring snow in the lower half of inferred denning elevation bands (Barsugli et al., 2020)and across all elevations in currently occupied states (Peacock, 2011) for the USApopulation.---Wolverine ranges in the USA are restricted to mountain environments and are fragmentedby developed private lands in valley bottoms. As snowpack decreases through the 21stcentury wolverine populations are expected to become more fragmented and isolated,especially in the USA (McKelvey et al., 2011a).---In the mountain regions of the USA wolverines' close association to snow interacts withbackcountry winter recreation. Using simultaneous GPS monitoring of mountainwolverines and winter recreationists, Heinemeyer et al. (2019) showed wolverinesavoided otherwise high-quality habitats in areas with higher recreation levels. Thestrength of avoidance increased with increased recreation, was greater for dispersedoff-trail activities, and was greater for motorized than non-motorized recreation(Heinemeyer et al., 2019). As human pressures for recreational space mount, increasingeffects on wolverines are expected in protected areas as last bastions of habitat, adding tothe list of stressors for future wolverine.Fisher et al., 2022. This study bolsters past findings that demonstrate wolverines are sensitive todisturbance from motorized winter recreation activities, and may alter their behavior in responseto motorized winter recreation activities. Wolverine may avoid areas where motorized winterrecreation activities occur. Disturbance from foot and snowmobile traffic have been purported tocause maternal female wolverines to abandon natal dens and relocate kits to maternal dens.102Snowmobile use commonly overlaps with wolverine denning habitat. Dispersed recreationalactivities like motorized winter recreation have the potential to negatively impact wolverine bydisrupting natal denning areas. Krebs et al., 2007; Lofroth and Krebs, 2007. Ruggiero et al.,2007. Wolverines have one of the lowest successful reproductive rates known to mammals, andthis is hypothesized as linked to winter energy constraints. Female wolverines select and enterdens and give birth in February to mid-March and the overlap of winter recreation with thisenergetically taxing period is highly concerning. Magoun et al., 2017. Any disturbance duringthis important winter period can negatively affect productivity and other vital rates. May et al.,2007; Krebs et al., 2007.As noted, researchers have reported that female wolverines may be sensitive to humandisturbance in the vicinity of natal and maternal dens, and disturbance from foot and snowmobiletraffic has been purported to cause maternal females to abandon or move dens. Magoun et al.,1998; Heinemeyer, et al., 2019. One study found that females tended to avoid areas withheli-skiing and backcountry skiing areas. Krebs et al., 2007. Another study found that motorizedrecreation occurred at higher intensity across a larger footprint than non-motorized recreation inmost wolverine home ranges. Heinemeyer, et al., 2019. Female wolverines exhibited strongeravoidance of off-road motorized recreation and experienced higher indirect habitat loss thanmale wolverines. Id. High-cirque snowmobile use, especially cross-country use and "highmarking," may present a substantial threat to wolverines and their habitat.These behavioral changes can negatively affect individuals' physiological stress levels andreproductive capacity in several ways, as evidenced in numerous studies on different species.Creel et al., 2002. It may reduce the amount of time and thus ability of female wolverines to huntor to utilize food caches. This would result in significant additive energetic effects, reducingforaging success for adult females already stressed by the demands of bearing and raising a litter.In addition, this could reduce kit survival rates by increasing the potential for predation andexposure to cold temperatures. These results indicate that winter recreation may impactwolverines in as yet unknown ways.As snowmobiling and backcountry skiing continue to grow in popularity and as snowpackcontinues to decline due to climate change, there is increasing concern that wolverine denninghabitat may become limiting. Recent warming has already led to substantial reductions in springsnow cover in the mountains of western North America. Mote et al., 2005; Pederson et al., 2010.Numerous recent and sophisticated studies support the conclusion that climate changes caused byglobal climate change are likely to negatively affect wolverine habitat. Magoun et al., 2017;Johnston et al., 2012; McKelvey et al., 2011; Copeland et al., 2010. Protection of denning habitatis critical for the persistence of the species.A Special Note On TrappingThe Forest Service must properly account for the threat trapping poses to wolverine recovery.Attached herein we provide our comments prepared by the Western Environmental Law Centeron the FWS's interim 4(d) rule for wolverine (Docket No. FWS-R6-ES-2023-0216) that expandson the threat trapping poses to wolverine recovery. See Ex. 8. Included with these comments isthe entire administrative record to which we cite in the letter. See Ex. 9.103 Notably, thesecomments explain there are a number of recent studies on the impacts of

wolverine trapping onpopulation viability in Canada (where targeted trapping is allowed and where incidental trappingoccurs). These studies demonstrate that the current rate of wolverine trapping in southern Canadais unsustainable and that trapping disproportionately impacts younger wolverines that are mostlikely to constitute the dispersers that the FWS relies upon to ensure connectivity with thelower-48 population. See FWS-0048770-83 (Mowat (2019)); see also FWS-0033542-49 (Kukka(2017)). Although the ultimate cause of the lack of connectivity between wolverines in thecontiguous United States and wolverines in Canada is not known with certainty, the FWSpreviously determined that it may be related to "harvest management in southern Canada." 75Fed. Reg. at 78,053. These recent findings demonstrate that unsustainable exploitation ofwolverines in Canada threatens wolverines in the lower-48 by impeding dispersal of Canadianwolverines across the international border. Id. The same is true in the lower 48 States wheretrapping can undermine wolverine movement and effective migration which is something neededfor the long-term viability of the species. An additional concern related to snowmobile use is thatmotorized access leads to increased trapping pressure (direct or indirect capture) for somefurbearers that prefer more mesic habitat conditions generally found at higher elevations or inriparian habitats, such as marten, fisher, lynx, and wolverine. Trapping season for these species islimited to the winter months, and most trappers prefer the relatively easy access to suitablehabitat provided by snowmobiles. Wolverine populations in small, isolated mountain ranges canbe very susceptible to trapping pressure. Squires et al., 2007. Trapping pressure for these speciesis dramatically reduced if there is less snowmobile access. The Draft EIS and Revised Plan mustproperly acknowledge, analyze or address the threats trapping pose.Cumulative EffectsThe final EIS must take a hard look at, and carefully consider, the overall cumulative effects towolverine. Cumulative impacts are "the impacts on the environment which result from theincremental impact of the action when added to other past, present, and reasonably foreseeablefuture actions regardless of what agency (Federal or non-Federal) or person undertakes suchother actions." 40 C.F.R. [sect] 1508.7. Cumulative impacts can result from "individually minor butcollectively significant actions taking place over a period of time." 40 C.F.R. [sect] 1508.7.The proper consideration of cumulative impacts requires "some quantified or detailedinformation; general statements about possible effects and some risk do not constitute a hardlook absent a justification regarding why more definitive information could not be provided."Great Basin Mine Watch v. Hankins, 456 F. 3d 955, 971 (9th Cir. 2006). Moreover, the "analysismust be more than perfunctory; it must provide a useful analysis of the cumulative impacts ofpast, present, and future projects." Id. The Forest Service "must do more than just catalogrelevant past projects in the area." Id. It must give a "sufficiently detailed catalog of past,present, and future projects and provide adequate analysis about how these projects, and thedifference between the projects, are thought to have impacted the environment." Id. Some"quantified assessment of their combined environmental impact" is required. Id. at 972.As such the Forest Service must fully and properly address in the Draft EIS the combined orcumulative effects to wolverine. In doing so, it is crucial for the Forest Service to not assume thatthe impacts are minimal because areas of mapped wolverine habitat on the forest are already inwilderness areas, IRAs, or in a non-motorized status. Notably, as wolverines lose habitat to theeffects of climate change, wolverine and motorized winter recreationists will be forced to sharesmaller and smaller habitat patches. Heinemeyer et al., 2019. Decreasing areas with sufficientsnow will amplify the effect of motorized winter recreation on wolverine due to the fact thatmotorized winter recreation will be concentrated in smaller areas on the Lolo NF. Protected areasin the proposed action may not necessarily provide for all of the wolverine's life historyrequirements.X. Designated, Management and Geographic AreasA. Regulatory and Policy Framework Under the 2012 Planning RuleThe planning rule provides three general approaches for administratively protecting importantconservation areas in a forest plan. The agency can establish designated areas (for the purposesof this letter, we are including areas recommended for designation in this category), geographicareas, and management areas.The first approach is for the Forest Service to establish designated areas. The rule defines adesignated area as "[a]n area or feature identified and managed to maintain its unique specialcharacter or purpose."104 Specific to designated areas, the planning rule requires the following ofthe Forest Service:

* Identify areas that may be suitable for inclusion in the National Wilderness Preservation System (NWPS), and determine whether to recommend any such lands for wilderness designation;
* Identify the eligibility of rivers for inclusion in the National Wild and Scenic Rivers System; and
* Identify existing designated areas (e.g., botanical areas, zoological areas, paleontological areas, etc.), and

determine whether to recommend any additional areas for designation.105
The planning rule requires that the plan must include plan components, including standards orguidelines that will ensure the appropriate management of designated areas or recommendeddesignated areas.106 The Forest Service Handbook offers direction regarding the developmentof plan components for designated areas and recommended designated areas:The Responsible Official shall include plan components that will provide for appropriatemanagement of designated areas based on the applicable authorities and the specificpurposes for which each area was designated or recommended for designation. Uses andmanagement activities are allowed in designated areas to the extent that these uses are inharmony with the purpose for which the area was designated. For recommendeddesignated areas, the uses and activities allowed should be compatible with the basis of therecommendation.107Further management of designated areas, in addition to plan components, is guided by policy inthe Forest Service directives at Forest Service Manual 2300.The second approach for administratively protecting important conservation areas in a forestplan is for the Forest Service to establish geographic areas. The planning rule definesgeographic area as "a spatially contiguous land area identified within the planning area" forwhich specific management direction (i.e., a set of plan components) is developed.108The third approach is for the Forest Service to establish management areas that are protective.The rule defines a management area as "a land area identified within the planning area that hasthe same set of applicable plan components. A management area does not have to be spatiallycontiguous." Id.Simply put, "geographic areas are based on place, while management areas are based on"purpose." Id. Every plan is required to have management areas or geographic areas or both.109Forest plans use management areas or geographic areas to describe how plan components applyto specific parcels of land, with locations shown on maps. Note that designated areas,management areas, and geographic areas can overlap.B. Recommended WildernessThe Recommended for Wilderness is far too little. The importance of Wilderness and InventoriedRoadless Areas has significantly increased since 1986. The 1986 recommendations are very outof date. For example, scientific research shows Wilderness provides the most secure habitat forgrizzly bears, elk, wolverine, lynx, bull trout, westslope cutthroat trout and numerous others.Wilderness is a place that humans visit but do not remain. It provides opportunities for unequalledsolitude, physical challenge, spiritual sustenance and renewal as well as breathtaking scenery and alaboratory for natural processes. Noss et al., 2019 wrote: Wilderness designation is recognized as the "GoldStandard" for preserving wildlands and ecological values. DiMarco et al. (2019) wrote: "Wilderness areas actas a buffer against species loss, as the extinction risk of species within wilderness communities is - on average - less thanhalf of that of species in non-wilderness communities." Most Bull Trout Strong Populations and Aquatic Strongholds were in wilderness habitat and wilderness provided the most secure habitatfor grizzly bears (Bader 2000). Effective ecosystem protection in the Northern Rockies can bebuilt upon a foundation of Wilderness habitat.Inventoried Roadless Areas larger than 5,000 acres on the Lolo National Forest are integralcomponents of Landscape Connectivity and protection of the Northern Continental Divide andBitterroot grizzly bear recovery regions. These are the "demographic stepping stones" of habitatfor grizzly bears and they are also vital for other wide-ranging species including elk, lynx andwolverine.The Recommended Wilderness shall, until Congress determines otherwise, be administered bythe Secretary of Agriculture to maintain their presently existing wilderness character andpotential for inclusion in the National Wilderness Preservation System. Mechanized andmotorized use shall be prohibited.The Plan Revision DEIS must include an alternative that recommends all eligible roadless landsas Wilderness. The following table corresponds to Figure 7 above.Area and Number Forest Acres1-Baldy Mountain Lolo 6,4762-Bob/Scapegoat Additions Lolo 118,4693-Burdette Lolo 16,0184-Cataract Lolo 9,4415- Cherry Peak Lolo 37,8856- Clear Creek Lolo 5,5387- Cube Iron-Silcox Lolo 36,9978- Deep Creek Lolo 7,6699- Evans Gulch Lolo 8,05510- Garden Point Lolo 6,32211- Gilt Edge-Silver King Lolo 10,05212- Great Burn Lolo 105,22013- Lolo Creek Lolo 14,33514- Maple Peak Lolo 6,47215- Marble Point Lolo 12,58116- Marshall Peak Lolo 9,06817- McGregor-Thompson Lolo 27,14518-Meadow Creek Lolo 6,92819- Mt. Bushnell Lolo 41,79820- North Siegel Lolo 9,17421- Patrick's Knob Lolo 16,97022- Petty Mountain Lolo 16,17823- Quigg Peak Lolo 67,26524- Rattlesnake Addition Lolo 2,88025-Rawhide Lolo 5,83326- Reservation Divide Lolo 16,90827- Rolland Point Lolo 6,47228- Selway-Bitterroot Add Lolo 3,86429- Sheep Mountain Lolo 37,83630- Silver King Lolo 12,93531- South Siegel Lolo 13,47332- Stark Mountain Lolo 12,60133- Stony Mountain Lolo 32,79734- Sundance Ridge Lolo 7,55735- Teepee-Spring Creek Lolo 13,90136- Ward Eagle Lolo 8,55237- Welcome Creek Add Lolo 1,06338- Wonderful Peak Lolo 1,321C. Wild

and Scenic RiversWater is the lifeblood of the Northern Rockies. The National Wild and Scenic Rivers Act wasenacted to protect free-flowing streams on national public lands that have outstanding wild,scenic and conservation values. Designated stream segments are protected from damconstruction and depending on category, can limit disturbance and development within a streamside corridor. This is important to the migratory native bull trout and cutthroat trout populationson the Lolo and Bitterroot National Forests.The Lolo National Forest contains the headwaters of several major rivers and streams includingthe Blackfoot River, Rock Creek, Rattlesnake Creek, Monture Creek, the Fish Creek drainageand others. The Lolo National Forest, through Forest Plan Amendment 12 (1991) found ninestreams eligible. These assessments are outdated and missed several key eligible streamsegments.The Plan Revision DEIS must contain an alternative that recommends all eligible streamsegments for Wild & Scenic River designation. Key stream segments are shown below in Figure8 taken from the Citizen Plan.Intentionally Left BlankFigure 8. Citizen Plan - Wild and Scenic RiversD. Protection and Restoration of Roadless LandsUndeveloped natural lands provide numerous ecological benefits. They safeguard biodiversity,enhance ecosystem representation (see discussion above), facilitate connectivity (Loucks et al.2003; USDA 2001; Crist and Wilmer 2005; Strittholt and Dellasala 2001; DeVelice and Martin2001), and provide high quality or undisturbed water, soil, and air resources (Anderson et al.2012;110 DellaSalla et al. 2011). They also serve as ecological baselines to facilitate betterunderstanding of our impacts to other landscapes (Arcese and Sinclari 1997).National Forest roadless lands, in particular, are heralded for their conservation values. Thosevalues are described at length in the preamble of the Roadless Area Conservation Rule(RACR).111 and in the Final Environmental Impact Statement (FEIS) for the RACR.112 Theyinclude: high quality or undisturbed soil, water, and air; sources of public drinking water;diverse plant and animal communities; habitat for threatened, endangered, proposed, candidate,and sensitive species and for those species dependent on large, undisturbed areas of land;primitive, semi-primitive non-motorized, and semi--primitive motorized classes of dispersedrecreation; reference landscapes; natural appearing landscapes with high scenic quality;traditional cultural properties and sacred sites; and other locally identified unique characteristics(e.g., uncommon geological formations, plexes, exceptional hunting and fishing opportunities).Numerous articles in the scientific literature similarly recognize the contribution of roadless andundeveloped lands to biodiversity, connectivity, and conservation reserve networks. Forexample, Loucks et al. (2003) examined the potential contributions of roadless areas to theconservation of biodiversity, and found that more than 25% of IRAs are located in globally orregionally outstanding ecoregions16 and that 77% of IRAs have the potential to conservethreatened, endangered, or imperiled species. Arcese and Sinclari (1997) highlighted thecontribution that IRAs could make toward building a representative network of conservationreserves in the United States, finding that protecting those areas would expand eco-regional representation, increase the area of reserves at lower elevations, and increase the number oflarge, relatively undisturbed refugia for species. Crist et al. (2005) looked at the ecological valueof roadless lands in the Northern Rockies and found that protection of national forest roadlessareas, when added to existing federal conservation lands in the study area, would: 1) increase therepresentation of virtually all land cover types on conservation lands at both the regional andecosystem scales, some by more than 100%; 2) help protect rare, species-rich, andoften-declining vegetation communities; and 3) connect conservation units to create bigger andmore cohesive habitat "patches."Roadless lands are also responsible for higher quality water and watersheds. Anderson et al.(2012) assessed the relationship of watershed condition and land management status, and found astrong spatial association between watershed health and protective designations. Dellasalla et al.(2011) found that undeveloped and roadless watersheds are important for supplying downstreamusers with high-quality drinking water, and that developing those watersheds comes atsignificant costs associated with declining water quality and availability. The authorsrecommend a light-touch ecological footprint to sustain healthy watersheds and the many othervalues that derive from roadless areas.The 2012 planning rule's substantive ecological sustainability provision sanctions this reservedesign and landscape connectivity approach, requiring the Forest Service to formulate "plancomponents, including standards and guidelines, to maintain or restore [the] structure, function,composition, and connectivity" of terrestrial and aquatic ecosystems and watersheds, taking intoaccount stressors such as climate change.113 Roadless lands are ideal areas to manage asclimate-change refugia, and to maximize their carbon storage potential by preserving old-growthhabitat and expanding old-growth forests by protecting mature trees, especially from misguidedvegetation management that purports to reduce so-called "uncharacteristic" wildfire. Roadlesslands

are ideal areas to apply a natural adaptation theme and to assist recovery by officiallyremoving system and non-system roads. The Forest Service must disclose the current above andbelow-ground carbon storage capacity of each Inventoried Roadless Area, and set objectives thatwill maximize their potential.Further, the Forest Service must analyze in its impacts analysis the extent to which Roadlesslands across the Lolo NF, including those identified in the Chapter 70 wilderness inventory,contribute to maintaining or restoring the following per 36 C.F.R. [sect] 219.8(a):

* Air, soil, and water quality;
* Ecological integrity - including structure, function, composition, and connectivity - of terrestrial and aquatic ecosystems and watersheds;
* System drivers, including dominant ecological processes, disturbance regimes, and stressors, such as natural succession, wildland fire, invasive species, and climate change; and the ability of terrestrial and aquatic ecosystems on the plan area to adapt to change;
* Wildland fire and opportunities to restore fire adapted ecosystems;
* Opportunities for landscape scale restoration;
* The diversity of ecosystems and habitat types throughout the plan area;
* Key characteristics associated with terrestrial and aquatic ecosystem types;
* Rare aquatic and terrestrial plant and animal communities; and
* The diversity of native tree species similar to that existing in the plan area.

The Lolo NF must analyze the impacts that each and their associated ecological and socialbenefits. We also request that the impacts analysis identify key landscapes where roadless landsare providing these ecological and social benefits, and describe the more localized impacts thateach alternative will have on the benefits these places provide.E. The Rattlesnake National Recreation Area (from the Citizen Plan).The proposed management of the Rattlesnake National Recreation Area is unacceptable. This isan area that was designated for its combination of wildlands and wilderness values close to anurban area. The proposed management is a transparent attempt to change the managementdirection for this area from special management to protect the wild, scenic and primitive valuesto general forest which allows roadbuilding, road reconstruction and logging. The existing ForestPlan manages most of this area the same as the Rattlesnake Wilderness. The direction outlinedbelow are far more consistent with the legislative intent in designating this area.Public Law 96-476 established The Rattlesnake National Recreation Area and Wilderness in1980. The NRA (25,000 acres) is the only NRA in Region 1 and is designated as ManagementArea 28 in the Lolo National Forest Plan. The baseline environmental condition in the NRA haschanged significantly since the 1986 Forest Plan. For example, the area is now continuouslyOccupied Grizzly Bear Habitat and is part of the Demographic Monitoring Area for grizzly bearsin the Grizzly Bear Conservation Strategy in the NCDE. A female grizzly bear with cubs hasinhabited the area. Also, the 1986 Plan did not foresee the rising recreation use levels includingmountain biking that have significant impacts on Forest resources including wildlife and soils.Nor did the Plan consider climate change science.There are several necessary amendments to the Standards and Guidelines for the NRA.1. On page III-145 under C. Standards 3. Change first sentence to "Tree removal shall belimited to individual trees to eliminate safety hazards to public users."2. Standards C. 4. Remove current language and replace with "Earth disturbingmanagement activities shall be prohibited."3. Standards C. 9. Remove current language and replace with "INFISH standards forriparian area protection shall be applied to streams within the NRA. Rattlesnake Creek isdesignated as Critical Habitat for the Bull Trout."4. Standards C. 12. Remove the first sentence and replace with "Natural fire plays animportant role in shaping the landscape of the NRA and adjacent Wilderness. Wildfiresuppression shall be limited to protection of structures on adjacent private lands."5. Standards C. 14. Remove the entire language and replace with "Road construction orreconstruction shall be prohibited within the NRA."6. Standards C. 15. Remove this section entirely.Additional RecommendationsMountain bike use is not addressed in the current Forest Plan. The Forest Service must completean Environmental Impact Statement on recreational use in the NRA which identifiesenvironmental impacts, the current baseline, and alternatives.Bikes with electric motors ("e-bikes") shall be prohibited within the NRA. Removal of anybiomass from the NRA shall be prohibited. Remove the co-designation of Trail 515 as a roadwhile maintaining legal access to the Wilderness dams.Rattlesnake WildernessThe Forest Service will support the city of Missoula's efforts to breach dams in the Wilderness ina wilderness-compatible way, and to restore the natural wetlands and ecological function of

thewilderness lakes. Remove the co-designation of Trail 515 as a road while maintaining legalaccess to the Wilderness dams. If the dams are breached or overland access is no longer needed,obliterate the road above the Franklin Bridge and recommend adding the portion of the "cherrystem" above Franklin Bridge to the Rattlesnake Wilderness and designate that portion ofRattlesnake Creek above Franklin Bridge as a Wild River.F. Factors to Consider in the Environmental AnalysisThe National Environmental Policy Act (NEPA) requires federal agencies to assess the direct,indirect and cumulative environmental impacts of proposed actions, taking a "hard look" atenvironmental consequences and performing an analysis commensurate with the scale of theaction at issue. 42 U.S.C. [sect] 4321 et seq; 40 C.F.R. [sect] 1508.8; see also Metcalf v. Daley, 214 F.3d1135, 1151 (9th Cir. 2000); Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 348(1989). Forest planning affects the entire landscape and can only be thoroughly and properlyassessed by considering potential impacts at a comparable level. In this section of our letter, weraise several significant issues pertaining to designated, management, and geographic areas thatthe Forest Service must analyze in its impacts analysis in order to satisfy NEPA's requisite "hardlook" analysis. Further, many of the issues raised pertain to the Forest Service's ability toachieve the rule's substantive requirement to provide for ecological sustainability, integrity anddiversity. Therefore, it is necessary for the Lolo NF to utilize this information and analyze theimpacts that we raise in its EIS in order to fulfill the rule's substantive mandates.Overall, while it is important for the Forest Service to provide analysis for its management ofdesignated Wilderness, Recommended Wilderness, Research Natural Areas, Roadless Areas andother relevant designated areas, it is also crucial to consider these areas together. As such theForest Service must disclose and analyze the value of those special designated areas as a system,particularly in regards to wildlife species, including their ability to move across the landscape,taking into account predicted environmental conditions and trends. Further, the agency mustdisclose and analyze the impacts of not protecting the wilderness character of lands identified inthe wilderness inventory that the agency did not recommend to be included in the NationalWilderness Preservation System.XI. Old growth and mature forestsA. IntroductionThe current Forest Plan Final EIS for the Nez Perce National Forest (1987) recognizes the ecologicalimportance of old growth:Habitat diversity is a measure of the variety, distribution, and structure of plant communities as theprogress through various stages. Each stage supports different wildlife species. One of the mostcritical elements of diversity in a managed forest is old growth. If sufficient old growth isretained, all other vegetative stages from grassland through mature forest will be representedin a managed forest.(Emphasis added.) The intensive and extensive industrial management paradigm promoted in the PAposes disaster for old growth and by extension, "all other vegetative stages." The remaining naturaldiversity "represented in a managed forest" including habitats for wildlife and fish on the LNF wouldnot resemble natural, pre-management conditions. This impression is reinforced by the PA's extreme"sustained yield limit of 144 MMBF (million board feet) per year."The current Forest Plan Final EIS for the Lolo National Forest (1986) states, "While a diversity ofvegetative types and age classes will be provided, old growth forests and dependent wildlife are mostsensitive to land management activities."The PA fails to recognize the full range of old-growth values, as the Forest Service Chief stated in the1989 Position Statement on National Forest Old Growth Values (found in Green et al., 1992):The Forest Service recognizes the many significant values associated with old growth forests, suchas biological diversity, wildlife and fisheries habitat, recreation, aesthetics, soil productivity, waterquality, and industrial raw material. Old growth on the National Forests will be managed toprovide the foregoing values for present and future generations.The content of the PA indicates public comments on the Draft Assessment comments wereignored. E.g., "FOC presents this discussion to correct and supplement the Assessment recordconcerning old-growth ecosystems because of the (Draft Assessment's) failure to objectivelyweigh facts and best available science." This lack of consideration of scientific informationinstalls unacceptable bias into the revision process, as we discuss in our section, "Climatechange, carbon storage and carbon sequestration."Juel, 2021 (Ex. 10) is a report cited in comments on the Draft Assessment. It identifies the challenges ofdefining old growth, and discusses ways the Forest Service has distorted and/or obfuscated old-growthdefinitions for purposes inconsistent with ecological sustainability. In many ways, the PA exhibits thenegative patterns noted in Juel (2021).The PA adopts, essentially word-for-word, the forestwide guidelines and other direction from thenational forest plan old growth amendment process proposal. For critique of that proposal(Federal Register / Vol. 88, No. 243 / Wednesday, December 20, 2023) please see Exhibits 11,12, 13, 14.Leading up to that national forest plan amendment proposal, the federal government issued a Request forInformation on Federal Old-growth and Mature Forests (87

FR 42493). See Exhibits 15, 16, 17 and 18which are letters in response to that solicitation.B. DefinitionThe PA provides a confusing definition of old growth, which reflects a gross misunderstanding of theconcept within the planning team. The Glossary has entries for "old-growth associated species", "oldgrowth forests" and "old growth habitat" but not for "old growth". Included in the entry for "oldgrowth habitat" are the words "Old growth habitat may or may not meet the definition for old growthforest" despite the two entries' many similarities. Yet this may be irrelevant because, oddly enough, theterm "old growth habitat" does not appear anywhere else in the PA, and isn't even found in the RevisedAssessment. Under old growth forests the Glossary entry states, "For the purposes of this document,old growth is defined as the minimum criteria established in Old Growth Forest Types of the NorthernRegion by Pat Green et al. 1992 (errata 2011) [hellip]unless more current scientific information becomesavailable." (Emphasis added.)The fact that the Forest Service has not settled on a definition for old growth at this stage of the revisionprocess renders the PA weak and tentative concerning such a vitally important issue. However for theremainder of our comments, we assume that where the PA refers to old growth, it means forest standsmeeting the "minimum criteria established in [hellip]Green et al. 1992" as the Glossary states.Of note, almost two decades preceding the PA, when the Forest Service first began it plan revisionprocess for the LNF, some of the organizations and/or individuals who prepared this PA comment lettersubmitted to the agency an April, 2004 document entitled, "Citizen reVision: Desired Future Conditionof the Bitterroot, Flathead & Lolo National Forests" (Ex. 19). It has a section on old growth, includingthe following text:(Green et al, 1992) is probably the best reference available for these forests and should be used as aguide to determine old-growth forest habitat. We strongly caution though that the minimumcharacteristics in Green et al, are not the recommended standards, but merely the startingpoint by which to determine whether a stand is classified as old growth. It is NOT to be usedto "manage" old growth down to these minimum characteristics. Also, it is important tonote thatold-growth attributes such as decadence, large trees, old trees, snags, canopy structure, coarsewoody debris, etc. are critical components of old-growth forest habitat. Stands that may not havethe minimum number of large trees but contain these other important attributes should beconsidered "recruitment" or future old-growth and allowed to progress towards meeting the Greenet al definition.(Bold emphasis added.) More recently, our comments on the Draft Assessment(Flathead-Lolo-Bitterroot Citizen Task Force et al. 7/7/2023) cited a 2004 document from the KootenaiNational Forest:Pages 11 and 12 of Green et al. state the appropriate use of the document. The following arepertinent quotes from the document to aid in that interpretation:1. No set of generated numbers can capture all the variation that may occur at any given age orstage in forest development.2. Because of the great variation in old growth stand structures, no set of numbers can be reliedupon to correctly classify every stand.3. Do not accept or reject a stand as old growth based on the numbers alone; use the numbersas a guide.4. The minimum criteria are used to determine if a stand is potentially old growth. Where thesevalues are clearly exceeded, a stand will usually be old growth. The associated structuralcharacteristics may be useful in decision making in marginal cases, or in comparing relativeresource values when making old growth evaluations.5. The basic concept is that old growth should represent "the late stages of stand development[hellip]distinguished by old trees and related structural attributes."6. A stand's landscape position may be as important, or more important as any stand oldgrowth attribute. The landscape is dynamic. We need to do more than draw lines to manage thisdynamic system. Consider the size of old growth blocks (large blocks have specialimportance), their juxtaposition and connectivity with other old growth stands, theirtopographic position, their shapes, their edge, and their stand structure compared toneighboring stands. Stands are elements in dynamic landscapes. We need to haverepresentatives of the full range of natural variation, and manage the landscape mosaic as awhole in order to maintain healthy and diverse systems.The Green et al. document is an aid intended to define, evaluate, and monitor old growth -not to be used as a prescriptive, management guide with minimum attribute values asthresholds. This will not achieve the objective of maintaining old growth.Another memo from the Forest Supervisor (May 14, 2003) states, "When minimums are used, theyare intended to illustrate the beginning of what could be identified as old growth[mdash]or late seral,successional development for a specific habitat group within a specific zone[mdash]not what isrecommended".(Emphasis in the original.) So the Lolo National Forest was cautioned against using the Green et al."minimum criteria" as its definition of old growth by the interested public twenty years ago, whichechoed a caution stated by Kootenai National Forest officials in the very same time frame, and whichwas stated once again last year as part of comments on the Draft Assessment. It is long since time theForest Service operationally

define "old growth" for application during implementation of the revisedforest plan in a manner that uses "minimum criteria" in a properly limited context, which we discussbelow. It is also time the Forest Service conceptualizes old growth not as distinct and separate "stands"scattered about the Forest but rather as ecosystems and landscapes, also addressed below.C. Old-Growth EcosystemsStands of trees meeting old-growth criteria are a part of old-growth ecosystems as recognized in theabove quote from the Forest Plan Final EIS of the Nez Perce National Forest and as stated in Green et al.(1992).The PA indicates that to the Forest Service, little but the Green et al "minimum criteria" for old-growthstands are of importance. The PA ignores dynamic, temporal and spatially diverse implications for oldgrowth. This topic is discussed extensively in Juel, 2021 and the scientific sources cited therein, e.g.:Forest Service management policies have focused mainly on identifying, designating, inventoryingand managing at the level of the old-growth "stand"[hellip] Kaufmann et al. 2007 identify limitations ofthis approach: "The term 'stand' may be more useful for management purposes than for describingthe ecology of forests."(From) Franklin and Spies, 1991:[hellip]Our failure to study old-growth forests as ecosystems is increasingly serious inconsiderations of old-growth issues. Without adequate basic knowledge of the ecosystem, werisk losing track of its totality in our preoccupation with individual attributes or species.Definitional approaches to old growth based on attributes[hellip] predispose us to such myopia. Thevalues and services represented by old-growth ecosystems will be placed at ever greater risk ifwe perpetuate our current ignorance about these ecosystems. It will also increase doubts aboutour ability to manage for either old-growth ecosystems.Green et al., 1992 admits: "Although old growth ecosystems may be distinguished functionally aswell as structurally, this definition is restricted primarily to stand-level structural features whichare readily measured in forest inventory." Also, "These old growth minimum criteria, associatedcharacteristics, and descriptions were developed to apply to individual stands." (Id.)Yet the Revised Assessment still conflates old-growth ecosystems and stands meeting growth criteria:"Though old-growth ecosystems are typically distinguished by old trees, these stands are notnecessarily in a late successional condition[hellip]" (emphases added).D. Active management cannot create or enhance old growthThe Forest Service has never demonstrated its active management of vegetation has served the widerange of old-growth values (Juel, 2021), since it has largely focused on timber production and firesuppression. The agency's management cannot make old growth "better" in terms of the functions oldgrowth plays in the ecology of forests. And the Forest Service also cannot accelerate its development,since the passage of time[mdash]with the changes and successional processes brings to forests[mdash]is notreplicable using active management in any realistic or ecological sense. Even the application ofprescribed fire for such purposes is questionable, since its application is intended for narrowlyprescribed conditions not conducive to sustaining the diversity that naturally results from unplannedwildland fire events.E. Old-growth associated speciesThis heading is identical to an entry in the PA's glossary, and therein a definition is provided. Oddlyenough, neither the PA, the Revised Assessment, nor even the Potential Species of ConservationConcern List identifies species meeting this definition. How can the Forest Service seriously representthe PA as maintaining ecological sustainability if it cannot identify even a single old-growth associatedspecies, and include Plan Components protective of their specific habitat needs? Juel, 2021 includes adiscussion of old-growth associated wildlife species.The LNF's 1986 Final EIS for the Forest Plan identified pileated woodpecker, snowshoe hare, fisher,boreal owl and northern goshawk as vertebrate species associated with old growth. But that list is toonarrow. The 1987 Forest Plan for the Kootenai National Forest (USDA Forest Service, 1987a) states:Richness in habitat translates into richness in wildlife. Roughly 58 wildlife species on the Kootenai(about 20 percent of the total) find optimum breeding or feeding conditions in the "old"successional stage, while other species select old growth stands to meet specific needs (e.g.,thermal cover). Of this total, five species are believed to have a strong preference for old growthand may even be dependent upon it for their long-term survival (see Appendix I114).F. Plan ComponentsNext we discuss the PA's Plan Components for old growth; also we evaluate the PA's "complementaryecosystem and species-specific approach: ecosystem integrity and species diversity."The LNF's 1986 Final EIS for the Forest Plan identifies the Forest Service strategy for insuring viablepopulations of old-growth associated wildlife, which recognized diverse vegetative types and properdistribution of old growth as vital:As a strategy for meeting old growth needs, the Forest was segregated into 71 drainages. Aminimum of 8 percent old growth was allocated to most of these drainages where wilderness wasnot available, although this varies to some degree by alternative (Table 11-19). This old growthwas then distributed by vegetative type within each drainage recognizing the individual needs

ofvarious old growth dependent species. While a diversity of vegetative types and age classes will beprovided, old growth forests and dependent wildlife are most sensitive to land managementactivities.[hellip]Laws and regulations require the maintenance of viable populations of old growth dependentspecies. Although there are an adequate number of wilderness acres, noncommercial acres andunsuitable commercial acres to support these populations, the acres are not optimally distributedspatially or by vegetative type. To rely only on these lands for old growth habitat would createlarge biological "isolates" and species survival would not be guaranteed. In selecting landsnecessary to maintain viable populations, unsuitable lands were selected first and suitable landsselected second. Suitable lands will be managed on a doubled rotation age to provide the necessaryover-mature component of old-growth habitat.[hellip]Roadlessness [hellip]is important in the maintenance of old-growth timber and its associated wildlifespecies. Providing adequate acreages of roadless will not by itself meet old growth vegetativeconditions. In addition, old growth must be distributed adequately in order to allow for speciesmobility and the maintenance of gene pools.We point out that the LNF revision document "Preliminary Need to Change" did not identify any part ofthe above 1986 Forest Plan old growth strategy as needing to be changed. Yet the Plan Componentsprofoundly change the management approach.Desired Condition FW-OG-DC-01: "The amount and distribution of old-growth forest conditions aremaintained and improved relative to the existing condition over time, recognizing that old-growth forestconditions are dynamic in nature and shift in the landscape over time as a result of succession anddisturbance." Typical of PA "Desired Conditions" (DCs) in general, the language is vague andnoncommittal, which means managers cannot be held accountable. It also provides no genuine temporaldirection.Whereas this DC sounds good on its face, the Forest Service has not identified "the existingcondition" for old growth in any revision documents so there can be no comparison "relative tothe existing condition(s)." The fact that such a situation conflicts with Forest Plan direction is notmentioned in any revision documents. The current Forest Plan includes "Additional DataRequirements and Accomplishment Schedule." It identifies "Site Specific Stand Age Class andCondition Inventory on Areas Allocated to MA 21"115 to be completed by 1992. Furthermore,since that was never done, and because of other forest plan implementation purposes, the ForestSupervisor issued a 1994 "Old Growth Strategy [hellip]for consistent implementation of an old growthstrategy within the Lolo Forest Plan." It included a section headed "INVENTORY, ANALYSIS,TRACKING OF OLD GROWTH". It committed to creating an old-growth inventory: "Duringthe NFMA analysis of an EMA,116 stands identified as old stands in excess of the 8% reserved asold growth, will be coded in TSMRS for the purpose of developing a complete inventory on theForest" (emphasis added). Yet despite its "old growth strategy" and the commitments it made, theLNF has no comprehensive old-growth inventory, and no maps showing where the agency hasidentified old growth, or verified old growth in Management Area 21 during project analyses116 "Ecosystem Management Areas (EMAs) will serve as the analysis area for making old growthallocations." (Id.) conducted over the past 38 years of Forest Plan implementation. The Forest Service iseffectively hiding old growth from the interested public. This renders FW-OG-DC-01meaningless.Desired Condition FW-OG-DC-02: "Proactive stewardship, including for retention and recruitment,along with natural succession, foster an increasing trend in the amount, representativeness, redundancy,and connectivity of old-growth forest conditions such that future conditions are resilient and adaptable tostressors and likely future environments." (Emphases added.) First, the failure of FW-OG-DC-01likewise makes the "increasing trend" statement in FW-OG-DC-02 meaningless. But this DC goesfurther in threatening old growth by identifying the agency's relationship to old growth to be highlymanipulative, controlling and mostly about active management. (See words emphasized.) We explain.The definition of "proactive" (but not found in the PA Glossary) is "serving to prepare for, intervene in,and control an expected occurrence or situation, especially an negative or challenging one." This is notthe relationship the public wants the Forest Service has for old growth. Why not preserve existing oldgrowth?The definition of "recruitment" (but not found in the PA Glossary) is "to gain new supplies of." Why notprioritize preservation of all old growth presently existing?The definition of "foster" (but not found in the PA Glossary) is "to promote the growth or developmentof." Old-growth ecosystems and old-growth associated wildlife did just fine over the centuries withoutthe extensive, industrial-style management proposed in the PA. These ecosystems need nofostering[mdash]they need protection.Desired Condition FW-OG-DC-03: "Carbon stored in old-growth conditions contributes to thelong-term carbon storage, stability, and resiliency of forest carbon across the National Forest System."That is a statement of fact. Ironically, as we discuss elsewhere, the FS ignores best available science inregards to carbon storage and even actively contradicts best available

scientific information on thissubject.Desired Condition FW-OG-DC-04: "The long-term abundance, distribution, and resiliency ofold-growth conditions contribute to the overall ecological integrity of ecosystems and watersheds."Although the active verb "contribute" is out of place in this (and in the previous) DC, at least the FSexhibits some of understanding of the values and ecosystem services of old growth.Standard FW-OG-STD-01: "Vegetation management activities must not degrade or impair thecomposition, structure, or ecological processes in a manner that prevents the long-term persistence ofold-growth forest conditions within the plan area." Although this standard seems to be setting the tonefor the right direction, it is too vague to be a constraint on management, as forest plan standards aremeant to be. In the context it's supposed to effect[mdash]which is project implementation[mdash]it's spatiallyvague ("within the plan area"), temporally vague ("long-term persistence") and sets an extremely highbar ("prevents"). If the Forest Service were to genuinely value old growth as "contribut(ing) to overallecological integrity of ecosystems and watersheds", the standard would simply say, "Vegetationmanagement activities shall not occur in old growth."Standard FW-OG-STD-02: "Vegetation management in old-growth forest conditions must be for thepurpose of proactive stewardship, to promote the composition, structure, pattern, or ecologicalprocesses necessary for the old-growth forest conditions to be resilient and adaptable to stressors andlikely future environments. Proactive stewardship activities shall promote[hellip]" (emphases added.)Again, the emphasized words are skewed in favor of highly manipulative, command-and-controlmanagement techniques for which there is no scientific basis to support the premise they can improveold growth or at the very least, have neutral effects. The best available science is incontrovertible instating that old growth is naturally, and inherently resilient and adaptable to stressors, so there's no needfor this standard. Furthermore, if the FS is able to describe even a single vegetation managementtechnique it has implemented on the Lolo NF in the past twenty years that would be constrained by thewording of this standard, we'd be interested in reading about it.And then there's the second part of this standard that effectively nullifies anything potentially beneficialabout the first part: "Exceptions to this standard may be allowed if the responsible official determinesthat actions are necessary to[hellip]" which is then followed by verbiage that echoes the Purpose and Needstatements found in every timber sale NEPA document issued by the LNF in the past two decades,which means the first part of the standard will be universally ignored during forest plan implementation.Standard FW-OG-STD-03: "Vegetation management within old-growth forest conditions maynot be for the primary purpose of growing, tending, harvesting, or regeneration of trees foreconomic reasons. Ecologically appropriate harvest is permitted in accordance with standards 1and 2." This constrains nothing. The responsible official need merely claim that clearcutting astand of 300-year old trees is okay because it is, vaguely: "beneficial to a particular forestecosystem type." The Forest Service is so locked into its command-and-controlconceptualization that it cannot see the forest. How can this management paradigm possiblyserve genuine ecological sustainability?Ultimately, the Forest Service must include meaningful and clear standards that will actually preserveold growth ecosystems well distributed across the LNF, and that begins by excluding any commercialexchange of old growth trees, and including plan components that will allow mature stands to developinto old growth habitat.XII. Climate change, carbon storage and carbon sequestrationIn regards to the climate crisis, our groups fully engaged in dialogue with the Forest Service at everyopportunity. Commenters responded to the Forest Service's Advance Notice of Proposed Rulemaking (88Fed. Reg. 24,497, April 21, 2023), requesting public comment on how the agency should protect, conserve,and manage the national forests and grasslands for climate resilience. (E.g., Ex. 20, Ex. 21.)Our organizations' previous comments on revision examine the implications of global climate changeand the likely ecological, social, and economic chaos we face in our collective future. A holisticconsideration of these facts is missing from the PA and other revision documents, including theRevised Assessment.Given the Revised Assessment's narrow view of climate-related issues, it's no surprise the directionin the PA flies in the face of the best scientific information by promoting management actions thatincrease carbon emissions over the very time frame climate scientists urge humanity to reduce theminstead. In these comments, across the various resource issues, our organizations provide concepts,ideas, methods, and tactics that must be assembled into an alternative for full and fair analysis in theupcoming draft EIS[mdash]one based on ecosystems' inherent resilience if traditional forest managementpractices are curtailed to a large extent. Ultimately, we envision the Lolo National Forest as part ofour nation's solution to head off the worst impacts of climate change[mdash]a vision the Forest Servicedoes not share at this point in time, much to our chagrin.A. Plan componentsDesired Conditions (DCs) FW-CC-DC-01,

FW-CC-DC-02 and FW-CARB-DC-01 most correctlyidentify intact forests and grassland ecosystems as part of our organizations' envisioned climatesolution, including providing the extremely important ecosystem services of long-term storage ofcarbon and climate mitigation. However since these DCs tacitly or explicitly embrace other plancomponents that suggest or call for intense active management such as extensivecommand-and-control vegetation manipulations, which head in the wrong direction climate-wise,these DCs have no beneficial effect.What is missing from these plan components is a standard[mdash]constraining management as standardsalone do most effectively as plan components[mdash]stating something to the degree that a managementtechnique is not allowed if it increases greenhouse gas emissions. We understand the need foradditional nuances in such a standard for achieving other outcomes our organizations support, such aswide-scale road decommissioning to best achieve landscape connectivity for species such as grizzlybears, so we welcome opportunities to dialogue for facing those challenges. Ultimately there will betrade-offs, but the level of sacrifice the PA now represents is not trade-off, it's extreme, ignores bestavailable science, and is totally unacceptable.B. LNF's revision process dismisses public input and biases outcomes against alternatives that would be based upon best available science on climate issues.Before we begin to describe how the Forest Service has done what the heading of this subsection saysit has, we must point out that similar failings and intentional distortions by the agency are evident inhow the revision process has treated the other issues our comments discuss in much detail, with theapparent intent to unreasonably restrict the range of alternatives to be fully and fairly considered inthe NEPA process. In other words, the Forest Service's failings on the climate issue described in thediscussion that follows exemplify the agency's active denial and passive omission of best scientificinformation on other issues.The NOI states, "The proposed action is to revise the 1986 Lolo National Forest land managementplan to address the identified need for change." The NOI continues:In response to the preliminary need for change, a preliminary Draft Land Management Plan hasbeen developed that includes desired conditions, goals, objectives, standards, guidelines,suitability of lands for specific multiple uses, lands that could be recommended to Congress forinclusion into the National Wilderness Preservation System, and the identification of riverseligible for inclusion into the National Wild and Scenic Rivers system. It can be found on theLolo National Forest Plan Revision website along with the Preliminary Need to Change.That preliminary Draft Land Management Plan makes up the bulk of the January 2024 "ProposedAction" document ("PA"). The NOI mentions at least two other revision documents that have notbeen subject to public comment so far, including the Revised Assessment and the Draft PreliminaryNeed to Change. The PA states, "This proposed action was developed using the findings in theRevised Assessment (September 2023) and the Preliminary Need to Change." It lists two "Additionaldocuments provided for public comment with the proposed action" and one is the "Preliminary Needto Change" but the Revised Assessment is not the other. We are assuming that omission isunintentional because another revision document, "Summary of Public Comments, Draft Assessmentand Potential Species of Conservation Concern, August 14, 2023" (or "Summary of PublicComments") states:As stated in the planning rule directives, "the public will have further opportunities throughoutthe plan development or revision phase and NEPA scoping to provide comment on informationin the assessment or provide new information as it relates to the proposed action and otherpossible alternatives." Accordingly, the planning team continues to receive and considerinput related to the assessment.(Emphasis added.) In that vein, we now make a second attempt at getting the Forest Service toproperly consider scientific information on forest ecosystems relating to climate change for informingrevision.Friends of the Clearwater's (FOC's) July 7, 2023 comments on the draft Assessment describe"misrepresentations of science and facts in a Forest Service document, 'Carbon Storage andSequestration in Land Management Plan Revision' (Lolo National Forest, January 2023) distributedat the most recent Roundtable." Therein the Forest Service stated:For many forests, harvesting timber on sustainably managed forests may effectively "store"more carbon over time than if the forest is unmanaged. "Store" in this sense refers to carbon inthe forest, carbon in harvested wood products, and the avoided carbon emissions in theatmosphere.That and similar biases exist in the draft Assessment at 2.10.3 Status and Trends. Those FOCcomments attempted "to correct and supplement the record by providing the [hellip]discussion" whichincluded citing scientific information not represented in or even contradicted by the Assessment. Weprovide a number of cited articles in support of our Draft Assessment comments and the commentsprovided herein. We stand ready to provide copies of any articles the Forest Service may need as itdevelops the Revised Plan Draft EIS.It is of vital importance that the agency address our Draft Assessment comments, because theAssessment

process is meant to be used, in part, "to inform the development of plan components andother plan content" according to the 2012 Planning Rule. Yet none of the above influenced thecontent of the Revised Assessment. Under "Theme 1" in the Summary of Public Comments theForest Service lists a whole host of issues about which the public had expressed concerns whilecommenting on the draft Assessment. The Summary of Public Comments states in response, "Theseissues are not directly relevant to the assessment or potential species of conservation concern but dopresent important issues and considerations that the team will consider in later steps in the planningprocess. [hellip] These comments and issues will not be addressed in the revised assessment."Our concern is, the "preliminary Draft Land Management Plan" (PA) already includes "plancomponents and other plan content" as described in the NOI, which we feel are based on biases theFS carried forth into the Revised Assessment and now, into the PA which says it "was developedusing the findings in the Revised Assessment (September 2023) and the Preliminary Need toChange."The PA acknowledges "The 2012 Planning Rule requires the responsible official to use the bestavailable scientific information to inform the development of a revised plan." It also states, "Chapters2 and 3 discuss science contradictions and areas lacking information."So how do those portions of the PA discuss science contradictions? In Chapter 2, the PA discusseshow climate change impacts forests and this is consistent with the best available science ourorganizations cited in comments on the Assessment. However in Chapter 3 the PA repeats theagency's biased, one-sided consideration of the impacts of forest management on the climate,particularly in regards to alleged benefits of harvested wood products: "Long-lived durable woodproducts manufactured from Lolo National Forest timber also play an important role in carbonstorage and climate change mitigation (Anderson et al. 2013)." The uninformed reader might get theimpression that the more trees are converted to wood products, the better it is for the climate. Yet thisis far from the truth. In fact, Anderson et al. 2013 cites Ingerson, 2011 which states in the Abstract:As a result of wood waste and decomposition, the carbon stored long-term in harvestedwood products may be a small proportion of that originally stored in the standingtrees[mdash]across the United States approximately 1% may remain in products in-use and 13% inlandfills at 100 years post-harvest. Related processing and transport emissions may in somecases approach the amount of (carbon-dioxide equivalent) stored in long-lived solid woodproducts. Policies that promote wood product carbon storage as a climate mitigationstrategy must assess full life-cycle impacts, address accounting uncertainties, and balancemultiple public values derived from forests."It is those points we emphasized above in bold that the PA and Revised Assessment fail to consider.Those were points raised in the scientific information cited in comment on the draft Assessment, sothe Forest Service has obviously chosen to ignore, distort, and obfuscate science thus far during theAssessment phase including for the writing of its preliminary Draft Land Management Plan. Oneprevious comment cited Talberth, 2023 as an example of a necessarily more complete assessment ofcarbon emissions associated with implementing a revised forest plan.Based on the analysis in Ingerson (2007), less than one-fifth of the carbon in trees removed fromforests through logging ends up in a wood product like dimensional lumber[mdash]the remainder ends upin the atmosphere almost immediately, mostly burned for dirty energy in biomass facilities or as hogfuel at lumber mills (e.g., branches, tree tops, bark, round parts, mill residues). See the chart belowfrom Ingerson, 2007:We are concerned that in proceeding with the revision process, the Forest Service will rejectalternatives for full consideration in the upcoming Draft EIS because they are based uponinterpretations of scientific information the agency has already tacitly or explicitly rejected. TheForest Service has stated that its determination of best available science informing the revisionprocess as per the 2012 Planning Rule will be "prior to the record of decision." (PA at 3.) Since it alsostates, "The documentation of the ongoing literature review and rationale for responses to literaturesubmitted will be summarized in the draft environmental impact statement" it is clear that the rangeof alternatives in that draft EIS will only be as wide as the agency is willing to go. That the ForestService has already failed to write an adequate Assessment after two tries means the Forest Serviceneeds to correct it before going forward in designing alternatives.We are fully aware that managing the Lolo National Forest with proper consideration of the climatecrisis would mean an abrupt about-face from what the agency has traditionally taken as its primarymission[mdash]providing timber and livestock forage. It would also be politically complicated, especiallygiven the agency's rhetoric117 in recent decades on how intensive and extensive industrialmanagement techniques can "restore" forests. But these are not normal times we're living in. Thebiosphere needs bold leadership, not bureaucrats following marching orders from people wanting tomaintain their power via the status quo.C. Detailed Review of Land Management Plan

Revised Assessment Appendix 2: Carbon AssessmentFirst off, the Revised Assessment Appendix 2 (Carbon Assessment) states, "This assessment wasprepared for the Lolo National Forest in April of 2021" so it's not even clear the Forest Service haseven revised this at all since the inception of the public portion of the revision process. In any case, itis a study in how to complicate the issue of carbon sequestration in a forest environment.1. The IssuesIn this period of rapid global warming, the central issues are how to minimize human greenhouse gasemissions and how to mitigate the effects of a warming climate by removing CO2 from theatmosphere (sequestration). Attempts at establishing baseline carbon stocks and flux using computermodels (which are inexact and depend upon the accuracy of data) serve no purpose other than todivert attention from the two central issues.2. Analyzing the Carbon AssessmentAlthough the details may prove interesting, which past human activities contributed to the currentstate of the Lolo National Forest matter little other than to inform forest management about whatshould be avoided.The Carbon Assessment asserts, "About 47.3% of carbon stocks [hellip] are stored in soil carbon." And"The aboveground portion of live trees [hellip] stores another 32% of the forest carbon stocks. (p. A2-4)However, another statement reveals, "All results in this assessment are estimates that are contingenton models, data inputs, assumptions, and uncertainties." (p. A2-7)The Carbon Assessment alleges:Although harvest transfers carbon out of the forest ecosystem, most of that carbon is not lost oremitted directly to the atmosphere. Rather, it can be stored in wood products for a variableduration depending on the commodity produced. Wood products can be used in place of othermore emission intensive materials, like steel or concrete, and wood-based energy can displacefossil fuel energy, resulting in a substitution effect (Gustavsson et al. 2006, Lippke et al. 2011).Much of the harvested carbon that is initially transferred out of the forest can also be recoveredwith time as the affected area regrows. (p. A2-8)The declaration "that most carbon is not lost or emitted" by harvest is simply not true. About 28% ofa tree's carbon is contained in the branches, typically burned shortly after harvest, and another 53% ofthe tree is discarded as waste during the manufacturing and milling process. That is approximatelytwo-thirds of the tree's carbon emitted as greenhouse gas (GHG) when a tree is harvested for lumber.(Smith, 2019 - See Ex. 23)Old, but often repeated claims that "Wood products can be used in place of other more emissionintensive materials, [hellip]" have been contradicted.Substitution of wood for more fossil carbon intensive building materials has been projected to resultin major climate mitigation benefits often exceeding those of the forests themselves. Areexamination of the fundamental assumptions underlying these projections indicates long-termmitigation benefits related to product substitution may have been overestimated 2- to 100-fold.(Harmon M. , 2019)The contention that "wood-based energy can displace fossil fuel energy" infers that burning woodemits less GHG than fossil fuels. That has been found to be nonsense. "Because combustion andprocessing efficiencies for wood are less than coal, the immediate impact of substituting wood forcoal is an increase in atmospheric CO2 relative to coal." (Sterman, 2018)The Carbon Assessment even admits, "As with the baseline estimates of ecosystem carbon storage,the analysis of carbon storage in harvested wood products also contains uncertainties." (p. A2-9)The Forest Service has a history of claiming national forests are at risk of catastrophic wildfires.Although the years covered by this assessment inexplicably end in 2011, it was only between 1990and 2011 that wildfire was the dominant disturbance type (Figure A2.6, p. A2-10) - no more recentwildfire evidence is presented. The admission that, "In most years, fire affected less than 0.2% of thetotal forested area[hellip]" (p. A2-10) makes the contention that the Lolo National Forest is at risk of beingconsumed by wildfire highly questionable.The Carbon Assessment states that, "timber harvest also affected a relatively small area of the forestduring this time. In most years, timber harvest affected less than 0.3 percent of the total forested areaof the Lolo National Forest in any single year from 1990 to 2011, [hellip]" (pp. A2-10-11)What is of interest here is that during most years, "fire affected less than 0.2%" while "timber harvestaffected less than 0.3%" which would seem to indicate that, at least during some years, loggingaffected more acreage than wildfire. That conclusion is in line with research conducted by OregonState University. See Figure 9 below.An Australian study found:Carbon stock losses associated with logging represent a much greater departure from naturaldisturbance in resprouting forests, because wildfire causes relatively little carbon loss inresprouting forests compared to non-resprouting forests. This analysis highlights the need toconsider specific biological responses when assessing forest carbon stock losses associated withdisturbance. [hellip] Above ground carbon stocks recovered faster after fire than logging. (Wilson,2021)The results of Wilson 2021 (and other studies) strongly suggest forests recover more quickly afterexperiencing wildfire than they do from logging. Thus, the Assessment's Figure A2.8 (p.A2-13)showing that fire was the most disturbing force in the

Northern Region, is positive information.The Carbon Assessment states:In some cases, removing carbon from forests for human use can result in lower net contributionsof greenhouse gases to the atmosphere than if the forest was not managed, when accounting forthe carbon stored in wood products, substitution effects, and forest regrowth (Lippke et al. 2011,McKinley et al. 2011, Skog et al. 2014, Dugan et al. 2018).Besides relying on several studies a decade or more old, the Carbon Assessment appears to havemisrepresented Dugan et al 2018. That research concludes:It is critical to apply a systems approach to comprehensively assess net emissions from forestsector climate change mitigation scenarios. Although some scenarios produced a benefit bydisplacing emissions from fossil fuel energy or by substituting wood products for othermaterials, these benefits can be outweighed by increased carbon emissions in the forest orproduct systems. Maintaining forests as forests, extending rotations, and shifting commoditiesto longer-lived products had the strongest mitigation benefits over several decades. Carboncycle impacts of bioenergy depend on timeframe, feedstocks, and alternative uses of biomass,and cannot be assumed carbon neutral. (Dugan, 2018)Dugan does notconclude that, in some circumstances, a managed forest can sequester more carbonthan an unmanaged forest as the Carbon Assessment asserts. Figure 9 better illustrates carbonemissions and the Revised Plan EIS should include a similar chart for the Lolo NF:Figure 9The Carbon Assessment declares:Forests are generally most productive when they are young to middle age, then productivitypeaks and declines or stabilizes as the forest canopy closes and as the stand experiencesincreased respiration and mortality of older trees (Pregitzer and Euskirchen 2004, He et al.2012), [hellip] (p. A2-14)That statement is contradicted by recent research. Stephenson et al. (2014) state:Here we present a global analysis of 403 tropical and temperate tree species, showing that formost species mass growth rate increases continuously with tree size. Thus, large, old trees donot act simply as senescent carbon reservoirs but actively fix large amounts of carboncompared to smaller trees; at the extreme, a single big tree can add the same amount of carbonto the forest within a year as is contained in an entire mid-sized tree. The apparent paradoxes ofindividual tree growth increasing with tree size despite declining leaf-level and stand-levelproductivity can be explained, respectively, by increases in a tree's total leaf area that outpacedeclines in productivity per unit of leaf area and, among other factors, age-related reductions inpopulation density. Our results resolve conflicting assumptions about the nature of treegrowth, inform efforts to understand and model forest carbon dynamics, and have additionalimplications for theories of resource allocation and plant senescence.(Emphases added.) And from Mildrexler et al. (2020):Large-diameter trees store disproportionally massive amounts of carbon and are a majordriver of carbon cycle dynamics in forests worldwide. In the temperate forests of the westernUnited States, proposed changes to Forest Plans would significantly weaken protections for alarge portion of trees greater than 53 cm (21 inches) in diameter (herein referred to as"large-diameter trees") across 11.5 million acres (~4.7 million ha) of National Forest lands. [hellip]We analyzed forest inventory data collected on 3,335 plots and found that large trees play amajor role in the accumulated carbon stock of these forests. Tree AGC (kg) increases sharplywith tree diameter at breast height (DBH; cm) among five dominant tree species. Large treesaccounted for 2.0 to 3.7% of all stems (DBH 1" or 2.54 cm) among five tree species; but held33 to 46% of the total AGC stored by each species. Pooled across the five dominant species,large trees accounted for 3% of the 636,520 trees occurring on the inventory plots butstored 42% of the total AGC. [hellip] Given the urgency of keeping additional carbon out of theatmosphere and continuing carbon accumulation from the atmosphere to protect the climatesystem, it would be prudent to continue protecting ecosystems with large trees for their carbonstores, and also for their co-benefits of habitat for biodiversity, resilience to drought and fire,and microclimate buffering under future climate extremes.Conducting a quantitative assessment using empirical data has determined the largecarbon stock that would be lost and the resulting climate consequences if these large treesare harvested. [hellip] Proforestation allows existing forests to continue growing without harvestor other management practices so that more trees can reach the large tree size that accumulatesmore carbon in the near and long term than do reforestation and afforestation (Moomaw et al.,2019).No additional land is required as is the case with afforestation, and proforestation is the lowestcost opportunity for reaching the zero net carbon goal by 2050. In fire-prone forests such as inour study area, a diameter limit strikes the balance between protecting the most fire-resistanttrees that store the most carbon and allowing fuels reduction with reintroduction of fire in drybiophysical environments. Intact mesic forests are ideal locations for proforestation.Harvesting large trees will add very large amounts of biogenic carbon to the atmosphere (Harriset al., 2016), and make the net zero carbon goal difficult or impossible ... The young trees

willnever be able to recover and accumulate the amount of carbon that is in the growing and olderforests during these next critical decades, and will only equal current levels a century or morefrom now. (Mildrexler, 2020) (emphasis added)Protecting large trees to help stabilize climate is critically important for managing forestecosystems as social-ecological systems.(Emphases added.) The Carbon Assessment states:As with the baseline estimates, there is also uncertainty associated with estimates of the relativeeffects of disturbances, aging, and environmental factors on forest carbon trends. For example,omission, commission, and attribution errors may exist in the remotely sensed disturbance mapsused in the Forest Carbon Management Framework and Integrated Terrestrial EcosystemCarbon models. However, these errors are not expected to be significant given that the mapswere manually verified, rather than solely derived from automated methods. (pp. A2-16-17)Given the lack of field work the Agency is capable of performing, the claim that "these errors are notexpected to be significant given that the maps were manually verified, rather than solely derived fromautomated methods" is highly suspect. Therefore, it must be assumed that the "uncertainty associatedwith the estimates" is very high and the conclusions reached are mere speculation.The Carbon Assessment admits as much when it declares, "However, the relative partitioning of theeffects of disturbance and non-disturbance factors as well as uncertainties at finer scales (e.g.,national forest scale) are likely to be considerably higher. (p. A2-17)The Carbon Assessment declares:[hellip] forest stands on the Lolo National Forest are mostly middle-aged and older (greater than 70years) with approximately 30% of the stands less than 70 years old, and about 20% greater than150 years of age (Figure A2.9). If the Forest continues this aging trajectory, more stands willreach a slower growth stage in coming years and decades (Figure A2.9), potentially causing therate carbon accumulates to decline and the Forest may eventually transition to a steady state inthe future. (p. A2-18)Again, the Agency proclaims that "a slower growth stage [hellip] potentially causing the rate of carbonaccumulation to decline[hellip]" possibly believing that repetition of a falsehood somehow makes itacceptable as truth. See (Stephenson, 2014) (Mildrexler, 2020)The Carbon Assessment asserts:For Resources Planning Act's Rocky Mountain Region [hellip], projections indicate that the rate ofcarbon sequestration will decline fairly rapidly in the 2020s mostly due to the loss of forestland(land-use transfer), causing the region's forests to shift to a carbon source. (pp. A2-18-19)That statement is only true if the area converted from forest to other uses is included in thecalculations for carbon sequestration. In reality, areas that remain forest (i.e., not converted) will notbe carbon sources but will remain carbon sinks.In fact, the Carbon Assessment admits that by stating:Converting forest land to a non-forest use removes a large amount of carbon from the forest andinhibits future carbon sequestration. National forests tend to experience low rates of land-usechange, and thus, forest land area is not expected to change substantially within the LoloNational Forest in the future, though planned land acquisitions will continue to occur. (p.A2-19)In what may be the most truthful statement presented in the document, the Carbon Assessment says:Because disturbance regimes are projected to increase with climate change (Vose et al. 2018),understanding past trends is not sufficient to fully understand vegetation carbon dynamics in thefuture. (p. A2-19)That statement suggests the question, "Rather than accept that future conditions are theoretical, whydoes the Agency continue to make decisions based on the past and outdated, contested research?"The Carbon Assessment proclaims:A climate change vulnerability assessment for the Forest Service Northern Rockies Region(Halofsky et al. 2018a), including the Lolo National Forest, indicates that temperature isprojected to increase throughout the 21st century. By the 2040s, mean annual monthlytemperatures are projected to increase in the Northern Rockies region. In the Western andCentral Subregions (which include the Lolo National Forest), maximum annual temperature isprojected to increase by 5-11 degrees Fahrenheit by 2100, and minimum annual temperature isprojected to increase by 5-12 degrees Fahrenheit by 2100. Minimum and maximumtemperatures are projected to increase in all seasons. The frequency of summer days withextreme heat is likely to increase (Halofsky et al. 2018a).Those statements agree with the most recent, best available scientific research. Unfortunately, recentand current management actions by the Agency seem to disregard scientific consensuses associatedwith global warming.Although referencing decade-old work when more recent research is available, the drafters of theCarbon Assessment seem to understand that "Carbon dioxide emissions are projected to increasethrough 2100 under even the most conservative emission scenarios (Intergovernmental Panel onClimate Change 2014)." (p. A2-21)But the Carbon Assessment then offers an excuse for not moving forward with care and restraint bydeclaring that, "Given the complex interactions among forest ecosystem processes, disturbanceregimes, climate, and nutrients, it is difficult to project how forests and carbon trends will respondunder novel future

conditions." (p. A2-21)3. CommentaryMost management activities associated with Agency projects contribute to the increasingaccumulation of greenhouse gases (GHG) in the atmosphere. For example, logging, thinning,prescribed fire, pile burning, travel to and from project sites, etc. all release GHG.Issued on August 1, 2016, this directive from Executive Office of the President, Council onEnvironmental Quality has been re-implemented as national direction. [See 86 Fed Reg. 10252 (Feb.19, 2021).]The 2016 CEQ guidance acknowledges, "changes in our climate caused by elevated concentrations ofgreenhouse gases in the atmosphere are reasonably anticipated to endanger the public health andpublic welfare of current and future generations." It directs federal agencies to consider the extent towhich a proposed action would contribute to climate change. It rejects as inappropriate any notionthat any project is of too small a scale for such consideration:Climate change results from the incremental addition of GHG emissions from millions ofindividual sources, which collectively have a large impact on a global scale. CEQ recognizesthat the totality of climate change impacts is not attributable to any single action, but isexacerbated by a series of actions including actions taken pursuant to decisions of the FederalGovernment. Therefore, a statement that emissions from a proposed Federal action representonly a small fraction of global emissions is essentially a statement about the nature of theclimate change challenge, and is not an appropriate basis for deciding whether or to what extentto consider climate change impacts under NEPA. Moreover, these comparisons are also not anappropriate method for characterizing the potential impacts associated with a proposed actionand its alternatives and mitigations because this approach does not reveal anything beyond thenature of the climate change challenge itself: the fact that diverse individual sources ofemissions each make a relatively small addition to global atmospheric GHG concentrations thatcollectively have a large impact.118The Forest Service must quantify GHG emissions. The Agency can only use a qualitative method iftools, methodologies, or data inputs are not reasonably available, and if that is the case, there needs tobe rationale as to why a quantitative analysis is not warranted. Quantitative tools are available, so theAgency must comply.119Given the urgency of preventing additional GHG emissions and continuing carbon sequestration toprotect climate ecosystems, it would be best to protect trees for their carbon stores and for theirco-benefits of habitat for biodiversity, resilience to drought and fire, and microclimate buffering underfuture climate extremes.According to a 2021 article, "Keeping trees in the ground where they are already growing is aneffective low-tech way to slow climate change." (Law & Moomaw, Keeping trees in the groundwhere they are already growing is an effective low-tech way to slow climate change, 2021)From Achat et al. (2015):Compared with other terrestrial ecosystems, forests store some of the largest quantities ofcarbon per surface area of land." Much of the carbon stored is within the soils, with a smallerpart in the vegetation. Forest management can modify soil organic carbon stocks. For example,conventional harvests like clearcutting or shelterwood cutting cause soils to lose organic carbonwhich is not the case for soils in unharvested forests. Not only does it lose the carbon stored inthe soils, but cutting trees eliminates the trees' potential to continue to sequester carbon.Our study showed that, compared with conventional stem-only harvest, removing the stem plusthe harvesting residues generally increases nutrient outputs thereby leading to reduced amountsof total and available nutrients in soils and soil acidification, particularly when foliage isharvested along with the branches. Losses of available nutrients in soils could also be explainedby reduced microbial activity and mineralization fluxes, which in turn, may be affected bychanges in organic matter quality and environmental conditions (soil compaction, temperature,and moisture). Soil fertility losses were shown to have consequences for the subsequent forestecosystem: tree growth was reduced by 3-7% in the short or medium term (up to 33 years afterharvest) in the most intensive harvests (e.g., when branches are exported with foliage).Combining all the results showed that, overall, whole-tree harvesting has negative impacts onsoil properties and trees that may have an impact on the functioning of forest ecosystems.Vegetation management attempts to replicate how the Forest Service theorizes forests lookedpre-European influence, ignores the larger pattern of climate, global warming, and disregards naturalsuccession. The Agency seems intent on continuing its attempts to replicate the past which exposesits refusal to accept that global warming has made such an endeavor impossible.As we discussed above in our comments on the Preliminary Need to Change, the Forest Service reliesheavily on assumed departures from historic conditions to support the purpose and need of everyproject. The agency must address these comments both in regards to the fundamental flaws in its PNCand as it relates to these comments on the Carbon Assessment.The Forest Service is a federal Agency. So when performing management activities (i.e., futureprojects) in Montana, it must abide by restrictions contained in Montana's constitution. More

plainly,Montana's constitution promises a clean and healthful environment:Article IX -- ENVIRONMENT AND NATURAL RESOURCES. Section 1. Protection andimprovement. (1) The state and each person shall maintain and improve a clean and healthfulenvironment in Montana for present and future generations.Thus, the Forest Service must ensure that its management activities do not contribute to thedegradation of the future environment. Management actions which release greenhouse gases (GHG)into the atmosphere or lessen the environment's ability to sequester CO2 do just that and run afoul ofMontana's constitution. (See Held v. State of Montana, CDV-2020-307 - August 14, 2023.)The Forest Service must acknowledge that mature forests sequester and accumulate massive amountsof atmospheric carbon stored mainly in large trees and soils making an invaluable contribution toclimate smart management and international climate commitments. (Stephenson, 2014) (Mildrexler,2020) Other studies demonstrate that unmanaged forests can be highly effective at capturing andstoring carbon. (Luyssaert, 2008) Further, mature, and old-growth forests have received increasedglobal attention in climate fora (IUCN 2021) and in the scientific community as natural climatesolutions. (Moomaw, 2019) Notably, Article 5.1 of the Paris Climate Agreement calls ongovernments to protect and enhance "carbon sinks and reservoirs." Article 38 of the UNFCCCCOP26 Glasgow Climate Pact emphasizes "the importance of protecting, conserving and restoringnature and ecosystems, including forests [hellip] to achieve the long-term global goal of the Conventionby acting as sinks and reservoirs of greenhouse gasses and protecting biodiversity[hellip] ." The USA wasalso one of 140 nations at the COP26 that pledged to end forest degradation and deforestation by2030. Logging both mature and old-growth forests is a form of forest degradation as it removesimportant forest structural features.In addition, several studies demonstrate that maintaining forests rather than cutting them down canhelp reduce the impacts of climate change. "Stakeholders and policy makers need to recognize thatthe way to maximize carbon storage and sequestration is to grow intact forest ecosystems wherepossible." (Moomaw, 2019)Another report (Hudiburg et al., 2019) concludes:Allowing forests to reach their biological potential for growth and sequestration, maintaininglarge trees (Lutz, 2018), reforesting recently cut lands, and afforestation of suitable areas willremove additional CO2 from the atmosphere. Global vegetation stores of carbon are 50% oftheir potential including western forests because of harvest activities (Erb, 2018). Clearly,western forests could do more to address climate change through carbon sequestration ifallowed to grow longer.A June 2020 paper from leading experts on forest carbon storage (Law et al., 2020) reported:There is absolutely no evidence that thinning forests increases biomass stored. It takes decadesto centuries for carbon to accumulate in forest vegetation and soils and it takes decades tocenturies for dead wood to decompose. We must preserve medium to high biomass(carbon-dense) forest not only because of their carbon potential but also because they have thegreatest biodiversity of forest species. (Internal citations omitted.)Clearly the role of mature and old-growth forests to store carbon and serve as a natural climate-crisissolution must be part of any detailed project-level analysis. The Forest Service owes a duty to thepublic to ensure that these forests remain standing so that they can continue to perform their vitalfunction of storing large amounts of carbon. See also Light v. U.S., 220 U.S. 523 (1911) ("the publiclands . . . are held in trust for the people of the whole country."); Juliana v. U.S., 217 F.Supp.3d 1224,1259 (D. Or. 2016) ("[t]he federal government, like the states, holds public assets . . . in trust for thepeople.") (rev'd on other grounds, Juliana v. U.S., 947 F.3d 1159 (9th Cir. 2020)); Selkirk-PriestBasin Ass'n Inc. v. State ex rel Andrus, 899 P.2d 949, 952-54 (Idaho 1995) (public trust doctrinepermits challenge to timber sales since increased sedimentation could impact trust resources).As such, the Forest Service should not be logging any mature or old-growth forests, at least until ithas completed the rulemaking that is currently being considered. Therefore, we are calling for amoratorium on mature and old-growth logging considering EO 14072 "calls particular attention to theimportance of (MOG) forests on Federal lands for their role in contributing to nature-based climatesolutions by storing large amounts of carbon and increasing biodiversity" (77 Fed. Reg. 24497,24498; see also MOG Report, at 3). Continuing to cut down and remove mature and old-growth treesand forests before the "definitions and inventory are established" and the current rulemaking iscompleted undermines the administration's focus on "nature-based climate solutions" for "storinglarge amounts of carbon."The Forest Service must provide detailed analysis which uses readily available methods and modelsthat represent high quality information and accurate greenhouse gas accounting (Hudiburg T. W.,Regional CO2 implications of forest, 2011) (Hudiburg T. W., Meeting GHG reduction targets requiresaccounting for all forest sector emissions, 2019) when undertaking environmental reviews of loggingprojects on federal lands. Research, including studies done by the U.S. government (Merril, 2018)indicates that logging on federal forests is a substantial source of

carbon dioxide emissions to theatmosphere. (Harris, 2016) Notably, logging emissions[mdash]unlike emissions from naturaldisturbances[mdash]are directly controllable. Models and methods exist that allow agencies to accuratelyreport and quantify logging emissions for avoidance purposes at national, regional, andproject-specific scales. As such, the Forest Service has the ability and responsibility to discloseestimates of such greenhouse gas emissions using published accounting methods with the expresspurpose of avoiding and/or reducing the greenhouse gas associated with logging, and acknowledgethe substantial carbon debt created by logging mature and old-growth trees and forests on federallands. (Hudiburg T. W., Meeting GHG reduction targets requires accounting for all forest sectoremissions, 2019) (Bartowitz, 2022)4. The Forest Service must provide a detailed carbon analysisTo address the aforementioned fatal flaws in the PA Carbon Assessment and provide the requisiteanalysis NEPA requires, it must at a minimum must consider the relevant science we cite and providethe following:

* Identify and assess gross emissions from logging, particularly logging mature and old-growth trees and forests on federal lands, including the emissions from logging on site and downstream emissions through the entire chain of custody of milling, manufacturing, and transportation
* Provide a high standard of scientific support for any asserted offsets of gross emissions, including discussion of timing factors that address the carbon debit created from logging vs avoiding logging and allowing stocks to further accrue. (Moomaw, 2019) Storing some carbon in short-lived wood product pools is not compensatory as an offset or avoidance for using other carbon-intensive materials in construction. (Harmon M. , 2019)

The Forest Service must also disclose direct and indirect climate impacts from removing,transporting, and milling wood.This includes emissions from loss of stored carbon during the removal at the forest (in-boundary) andmanufacturing and transport process (out-of-boundary). That is, Guidance should more closelyspecify the need to disclose the GHG emissions from logging on site through the entire chain ofcustody of milling, manufacturing, and transportation, including:

* construction, reconstruction, and maintenance of logging access routes;
* all forms of logging operations (clearcut, selective, postfire, commercial thinning, etc.),including any herbicides, insecticides, and related treatments;
* transport of logs to mills;
* milling of the wood; and
* transport of products to other sectors.

These emissions and others are all foreseeable impacts of logging and thinning projects. In somecases, these impacts may be considerable. For example, the South Plateau Project in Montana, wouldresult in at least 40,000 trips by fully loaded logging trucks to remove the 83 million board feet oftimber and will involve the construction (and subsequent obliteration) of up to 57 miles of temporaryroad. We note that in addressing the impacts of coal mine expansions, federal agencies have disclosedthe GHG emissions of equipment used to mine coal and to transport it to market. Land managementagencies can and should make similar projections for GHG pollution associated with vegetationremoval projects.As discussed above, the Forest Service routinely asserts that the impacts of logging on carbon storeswill be minimal because carbon from logged trees will be stored long-term in forest products. Suchassertions are contrary to research indicating that much of the carbon stored in removed trees is lost inthe near term, and little carbon is stored long-term in wood products.For example, Hudiburg et al. (2019) evaluated the quantification of biogenic emissions in the state ofWashington, which included GHG emissions from logging, but not decomposition of wood products.The study concluded that the failure to address decomposition losses amounted to as much as a 25%underestimation of carbon emissions.Losses from decomposition vary over time and depend on the lifetime of the wood product beingproduced from the timber. Paper and wood chips, for example, have very short lifetimes and willrelease substantial carbon into the atmosphere within a few months to a few years of production.Bioenergy production and burning has been found to release more emissions than burning coal,including methane. Product disposal in landfills results in anaerobic decomposition which alsoreleases methane. Methane has a global warming potential about 30 times that of carbon dioxide over100 years, and over 80 times that of carbon dioxide over 20 years, magnifying the impact of disposalof short-term wood products.Longer term wood products can store carbon for many decades, but this depends on the life of theproduct. To give a sense of the larger picture, a study modeling carbon stores in Oregon andWashington from 1900-1992 showed that only 23% of carbon from logged trees during this

timeperiod was still stored as of 1996. (Harmon M. e., 1996) Similarly, > 80% of carbon removed fromthe forest in logging operations in West Coast forests was transferred to landfills and the atmospherewithin decades. Hudiburg et al. (2019) concludes that state and federal carbon reporting haderroneously excluded some product-related emissions, resulting in a 25-55% underestimation of statetotal CO2 emissions from logging. Many of the aforementioned decomposition emissions could beavoided if trees were left standing, especially by protecting carbon stocks from logging of mature andold trees and forests on federal lands.A NEPA analysis would disclose the trade-off and the importance of maintaining the stock value ofmature and old trees. Such an analysis should quantify both the short-term and long-term gross andnet impacts of logging projects. That will allow the Forest Service to disclose and assess thetrade-offs between increasing GHG emissions via logging now[mdash]when decreases are most sorelyneeded[mdash]versus alleged increases in storage later. Detailed NEPA analysis would also avoid ignoringshort-term carbon losses due to logging based on the erroneous assumption that the residual forestwill have significantly reduced potential to have its carbon stores diminished by high-severity fires.Decades of research, however, call these sorts of blanket assertions into question. Moreover, that isnot a basis for failing to disclose emissions from the logging itself, especially in comparison to fire.Research shows that emissions from logging greatly exceed those from all natural disturbancescombined (fire, insects, windstorms). (Harris, 2016)The CEQ recently issued Guidance clarifying that agencies must address the emissions and storageimpacts of project-specific vegetation removal projects, "such as prescribed burning, timber standimprovements, fuel load reductions, and scheduled harvesting."120 The Forest Service should alsoassess emissions from pile burning related to forestry operations, as such actions intensify carbonrelease.The nature of the global warming emergency is based on multiple points of emission sources, witheach contributing to the problem cumulatively. Therefore, analysis is a critical undertaking and onefor which land management agencies now have the tools to quantify the contribution of each federalaction, including in cumulative effects analyses.Given the significant climate impact of logging on federal lands, it is critical that agencies estimateand quantify greenhouse gas emissions associated with each individual logging project and provideannual estimates associated with total logging on federal lands.The Agency must expand its abilities and expectations around accounting for logging emissions as asignificant contributor to climate change in tandem with continued progress in fire emissionsaccounting that more accurately captures actual carbon emissions from forest fires. (Harmon et al.,2022.)Finally, the need to provide detailed carbon accounting was a central feature in a recent U.S. DistrictCourt (Montana) decision (Center for Biological Diversity et al v. U.S. Forest Service; CV22-114-M-DWM, where Judge Molloy states:Ultimately, "[greenhouse gas] reduction must happen quickly" and removing carbon fromforests in the form of logging, even if the trends are going to grow back, will take decades tocenturies to re-sequester. FS-038329. Put more simply, logging causes immediate carbonlosses, while re-sequestration happens slowly over time, time that the planet may not have.FS-020739 (I[t] is recognized that global climate research indicates the world's climate iswarming and that most of the observed 20th century increase in global average temperatures isvery likely due to increased human-caused greenhouse gas emissions.").[hellip]NEPA requires more than a statement of platitudes, it requires appraisal to the public of theactual impacts of an individual project. [hellip](T)he USFS has the responsibility to give the publican accurate picture of what impacts a project may have, no matter how "infinitesimal" theybelieve they may be.The Forest Service must provide the requisite analysis that acknowledges and addresses the court'sopinion.All future projects must include a thorough, in-depth analysis of its effects on the earth's climate.Management activities associated with projects will require large amounts of fossil fuel. Recentresearch indicates that, on an annual basis, logging and thinning emit far more carbon than wildfire.(Harris, 2016) Other research shows that logged forests sequester less carbon than untreated forests.(Campbell, 2011) (Wilson, 2021) Any and all management activities which exacerbate climatechange should be removed from future projects unless they can be completely offset by includingother activities which have been scientifically shown to mitigate global warming.The earth's climate is warming substantially. Recent research indicates that, no matter whatmitigation actions are initiated, human activity has already increased greenhouse gas enough to warmthe planet by at least 2 - 2.5 degrees Celsius (3.6 - 4.5 Fahrenheit. Recent research which clearlyshows that the total greenhouse gas emissions from logging is at least three times the levels producedduring an average wildfire season.121 (Harris, 2016)The Forest Service ignores the large body of science on forest management's adverse effects oncarbon sequestration. The Forest Service has never analyzed and disclosed the cumulative effects ofoverall Agency management contributions to the

reduction in stored carbon and thus, to climatechange.The Forest Service fails to provide comprehensive estimates of the total amount of CO2 or othergreenhouse gas emissions caused by Agency management actions and policies[mdash]forestwide,regionally, or nationally. Instead, flying in the face of science and common sense, the Forest Servicemakes use of controversial science to suggest its actions and policies would be net neutral or wouldeven help carbon sequestration. Agency policymakers seem comfortable maintaining a position thatthey need not take any leadership on this issue, and obfuscate to justify their failure of leadership.The best scientific information strongly suggests that management that involves removal of trees andother biomass is a strong net source of atmospheric CO2. If the Forest Service really believes itscarbon modeling can provide meaningful information, it should model the carbon flux over time forall of its proposed stand management scenarios for each of the forest types on the Lolo NationalForest.GHG emissions from all common human activities related to forest management and recreationaluses must be analyzed. These include emissions associated with machines used for logging andassociated activities, vehicle use for administrative actions, recreational motor vehicles, and mostemissions associated with livestock grazing. The Forest Service is simply ignoring the impacts ofthese management and other authorized activities.Such greenhouse gas sources can be quantified. Kassar and Spitler (2008) for example, provide ananalysis of the carbon footprint of off-road vehicles in California. They determined:Off-road vehicles in California currently emit more than 230,000 metric tons [mdash] or 5000 millionpounds [mdash] of carbon dioxide into the atmosphere each year. This is equivalent to the emissionscreated by burning 500,000 barrels of oil. The 26 million gallons of gasoline consumed byoff-road vehicles each year in California is equivalent to the amount of gasoline used by 1.5million car trips from San Francisco to Los Angeles.Off-road vehicles emit considerably more pollution than automobiles. According to theCalifornia Air Resources Board, off-road motorcycles and all-terrain vehicles produce 118 timesas much smog-forming pollutants as do modern automobiles on a per-mile basis.Emissions from current off-road vehicle use statewide are equivalent to the carbon dioxideemissions from 42,000 passenger vehicles driven for an entire year or the electricity used topower 30,500 homes for one year. (Kassar, 2008)Sylvester, 2014 provides data on the amount of fossil fuel being consumed by snowmobiles inMontana, from which one can calculate the carbon footprint. The study finds that residentsnowmobilers burn 3.3 million gallons of gas in their snowmobiles each year and a similar amount offuel to transport themselves and their snowmobiles to and from their destination. Non-residentsannually burn one million gallons of gas in snowmobiles and about twice that in relatedtransportation. That adds up to 9.6 million gallons of fuel consumed in the pursuit of snowmobilingeach year in Montana alone. Multiply that by 20 pounds of carbon dioxide per gallon of gas (dieselpickups spew 22 pounds per gallon) and snowmobiling releases 192 million pounds (96 thousandtons) of climate-warming CO2 per year into the atmosphere. (Sylvester, 2014)The Agency also ignores the cumulative CO2 emissions from forest management on other ownershipsin the region or beyond. Clearly timber management continues to be a net source of CO2. Omittingsuch a cumulative effects analysis allows the Forest Service to avoid describing the opportunity foundon national forests to counterbalance some CO2 emissions from other forest ownerships, resulting in arange of alternatives where none really address climate change. This violates NEPA, as well as thepublic trust.The Agency typically does not analyze or disclose the body of science that implicates loggingactivities as reducing carbon stocks in forests and increasing greenhouse gas (GHG) emissions. TheForest Service misleads the public, distracting from the emerging scientific consensus that removingwood or any biomass from the forest only makes the problem worse. The science on climate changestrongly indicates that forest policies must shift away from logging if carbon sequestration is agenuine emphasis. All old-growth forest areas, other unlogged or lightly logged forests, and healthygrasslands must be preserved indefinitely for their carbon storage value. Forests that have beenlogged should be allowed to eventually revert to old-growth condition. This type of management hasthe potential to double the current level of carbon storage in some regions. (Harmon M. a., 2002)(Harmon M. E., 2001) (Harmon M. E., (1990) Effects on carbon storage of conversion of old-growthforest to young forests, 1990) (Homann, 2005) (Law B. E., Role of Forest Ecosystems in ClimateChange Mitigation, 2014)Keith et al., 2009 state:Both net primary production and net ecosystem production in many old forest stands have beenfound to be positive; they were lower than the carbon fluxes in young and mature stands, but notsignificantly different from them. Northern Hemisphere forests up to 800 years old have beenfound to still function as a carbon sink. Carbon stocks can continue to accumulate in multi-agedand mixed species stands because stem respiration rates decrease with increasing tree size, andcontinual turnover

of leaves, roots, and woody material contribute to stable components of soilorganic matter. There is a growing body of evidence that forest ecosystems do not necessarilyreach an equilibrium between assimilation and respiration, but can continue to accumulatecarbon in living biomass, coarse woody debris, and soils, and therefore may act as net carbonsinks for long periods. Hence, process-based models of forest growth and carbon cycling basedon an assumption that stands are even-aged and carbon exchange reaches an equilibrium mayunderestimate productivity and carbon accumulation in some forest types. Conserving forestswith large stocks of biomass from deforestation and degradation avoids significant carbonemissions to the atmosphere.Our insights into forest types and forest conditions that result in high biomass carbon density can beused to help identify priority areas for conservation and restoration.Campbell et al., 2011 also refutes the notion that fuel-reduction treatments increase forest carbonstorage in the western US:It has been suggested that thinning trees and other fuel-reduction practices aimed at reducing theprobability of high-severity forest fire are consistent with efforts to keep carbon (C) sequesteredin terrestrial pools, and that such practices should therefore be rewarded rather than penalized inC-accounting schemes. By evaluating how fuel treatments, wildfire, and their interactions affectforest C stocks across a wide range of spatial and temporal scales, we conclude that this isextremely unlikely. Our review reveals high C losses associated with fuel treatment, onlymodest differences in the combustive losses associated with high-severity fire and thelow-severity fire that fuel treatment is meant to encourage, and a low likelihood that treatedforests will be exposed to fire.Although fuel-reduction treatments may be necessary to restore historical functionality tofire-suppressed ecosystems, we found little credible evidence that such efforts have the addedbenefit of increasing terrestrial C stocks. (Campbell, 2011)The most recent U.S. report of greenhouse gas emissions states that our forests currently "offset" 11to 13 percent of total U.S. annual emissions. That figure is half that of the global average of 25% andonly a fraction of what is needed to avoid climate catastrophe.And while the U.S. government and industry continue to argue that we need to increase markets forwood, paper, and biofuel as climate solutions, the rate, scale, and methods of logging in the UnitedStates are having significant, negative climate impacts, which are largely being ignored in climatepolicies at the international, national, state, and local levels.The actual carbon stored long-term in harvested wood products represents less than 10 percent of thatoriginally stored in the standing trees and other forest biomass. If the trees had been left to grow, theamount of carbon stored would have been even greater than it was 100 years prior. Therefore, from aclimate perspective, the atmosphere would be better off if the forest had not been harvested at all. Inaddition, when wood losses and fossil fuels for processing and transportation are accounted for,carbon emissions can actually exceed carbon stored in wood products.Law and Harmon, 2011 conducted a literature review and concluded: Thinning forests to reducepotential carbon losses due to wildfire is in direct conflict with carbon sequestration goals, and, ifimplemented, would result in a net emission of CO2 to the atmosphere because the amount of carbonremoved to change fire behavior is often far larger than that saved by changing fire behavior, andmore area has to be harvested than will ultimately burn over the period of effectiveness of thethinning treatment. (Law & Harmon, Forest sector carbon management, measurement andverification, and discussion of policy related to mitigation and adaptation of forests to climate change,2011)Moomaw and Smith, 2017 state:Multiple studies warn that carbon emissions from soil due to logging are significant, yetunder-reported. One study found that logging or clear-cutting a forest can cause carbonemissions from soil disturbance for up to fifty years. Ongoing research by an N.C. StateUniversity scientist studying soil emissions from logging on Weyerhaeuser land in NorthCarolina suggests that "logging, whether for biofuels or lumber, is eating away at the carbonstored beneath the forest floor."Moomaw and Smith, 2017 examined the scientific evidence implicating forest biomass removal ascontributing to climate change:All plant material releases slightly more carbon per unit of heat produced than coal. Becauseplants produce heat at a lower temperature than coal, wood used to produce electricity producesup to 50 percent more carbon than coal per unit of electricity.Trees are harvested, dried, and transported using fossil fuels. These emissions add about 20percent or more to the carbon dioxide emissions associated with combustion.Protecting and expanding forests is not an "offset" for fossil fuel emissions. To avoid seriousclimate disruption, it is essential that we simultaneously reduce emissions of carbon dioxidefrom burning fossil fuels and bioenergy along with other heat trapping gases and accelerate theremoval of carbon dioxide from the atmosphere by protecting and expanding forests. It is notone or the other. It is both!Achieving the scale of forest protection and restoration needed over the coming decades may be achallenging concept to embrace politically; however, forests are the only option that

can operate atthe necessary scale and within the necessary time frame to keep the world from going over theclimate precipice. Unlike the fossil fuel companies, whose industry must be replaced, the woodproducts industry will still have an important role to play in providing the wood products that weneed while working together to keep more forests standing for their climate, water, storm protection,and biodiversity benefits.It may be asking a lot to "rethink the forest economy" and to "invest in forest stewardship," buttabulating the multiple benefits of doing so will demonstrate that a forest is worth much morestanding than logged. Instead of subsidizing the logging of forests for lumber, paper and fuel, societyshould pay for the multiple benefits of standing forests. It is time to value U.S. forests differently inthe twenty-first century. We have a long way to go, but there is not a lot of time to get there.XIII. Soil Biota - MycorrhizaeA. The EIS must consider and address our previous comments on the Draft AssessmentIn response to the draft Assessment, we provided detailed information regarding soil biota, andin particular the value of mycorrhizae in the context of ecosystem services and overall ecologicalsustainability.122 We included an overview of the general mycorrhizal scientific background,including the fact that many studies report declines in mycorrhizal fungi due to various causesincluding land use change, invasive species, pollution deposition, and herbicide use (e.g.Meinhardt & Gehring 2012; Swaty et al. 2016; Lilleskov et al. 2019). Climate change alsothreatens the type of mycorrhizal fungi known to best support carbon sequestration calledectomycorrhizal fungi (EMF)(Baird & Pope 2021). In addition, disturbances such as logging andthinning (Wiensczyk et al. 2002), fragmentation and edge habitat (e.g. Sapford et al. 2020;Tatsumi et al. 2023) the treatment of invasive vegetation with pesticide (Helander et al. 2018), orself-reinforcing soil legacies left after invasion by exotic vegetation (e.g. Meinhardt & Gehring2012; Anthony et al. 2019), may quietly continue to reduce beneficial fungi, if these impacts arenot recognized and specifically addressed as part of land management planning (Davoodian2015; May et al. 2018; Willis 2018; Markovchick et al. 2023). These effects are not short-term,and ripple throughout the ecosystem, as evidenced by study after study that shows the need for,and effectiveness of, restoring diverse native mycorrhizal communities after various kinds ofdisturbance. For example, Pankova et al. (2018) found that a single fungicide application leftmycorrhizal inoculum and plant outcomes far from reference levels even after five years.Given our Draft Assessment comments, we hoped to see mychorrizae receive more considerationin the Revised Assessment and specific plan components dedicated to discussing how soil biotaand mycorrhizae support ecosystem sustainability and all the ecosystem services we listed in ourcomments. Unfortunately, the Forest Service failed to acknowledge the role mycorrhizae serve,and even asserted that logging could be beneficial:Harvesting timber and addressing fuels reduces the above ground biomass on a site andthus the residual vegetation has high value towards contributing to soil function as bothmulch and substrate for soil nutrient cycling.123To be clear, even if residual vegetation (slash) provides some soil benefits, those are likely vastlyoutweighed by timber harvest impacts and associated activities such as road construction orpost-harvest herbicide application. This in addition to the loss of soil moisture from the increasedsolarization of exposed soils, or the impacts from any intentional post-harvest burning of slashpiles and broadcast burns. It is beyond credulity to assert that logging benefits soil biota and theecosystem services mycorrhizae provide. The Forest Service must better address the commentswe provided on this issue in its Revised Plan EIS. In doing so, the agency must pay particularattention to the role of common mycorrhizal networks.Although the exact function of common mycorrhizal networks (the roots of separate plants linked by anetwork of fungal strands) is challenging to ascertain under field conditions, even critics recognize theirexistence in the field and demonstrated functions under controlled conditions (e.g. Karst et al. 2023),and evidence in field is "solid and accumulating" (Klein et al. 2023). For example, these undergroundnetworks are known to share resources between trees, shrubs, and other understory plants in the field,with some plants known as mycoheterotrophs being entirely dependent on this setup (e.g. Karst et al.2023; Selosse et al. 2006). Under laboratory conditions, the use of autoradiography, dye tracers, and airgap treatments provide convincing evidence that resources are shared via the connections between plantsprovided by mycorrhizal fungi, including carbon (e.g. Finlay et al. 1986; Brownlee et al. 1983; Wu et al.2001), phosphorus (e.g. Finlay 1989), water (e.g. Warren et al. 2008; Plamboeck et al. 2007;Egerton-Warburton et al. 2007), and defense signals (Babikova et al. 2013). This ability to spreadresources (Peay et al. 2016) in the field would reduce risk and increase the inherent stability ofecosystems the way that financial portfolios reduce the risk of investing (Schindler et al. 2015).While trees communicate chemically all the time through the volatile organic chemicals they producewafting through the air, research indicating communications and resources are shared

through soil, rootsystems, and common mycorrhizal networks (e.g. Babikova et al. 2013; Bingham & Simard 2011;Simard et al. 2015) poses special new questions for the land and natural resources communities, due tothe ability of land management actions to impact the soil community. If the ability of trees tocommunally send stronger insect control signals or share resources in times of need is impacted bycurrent tree density reduction practices, as suggested by the scientific literature referenced herein, thenthe government would be liable for ignoring this large body of science, and the impact of its actions.Even the critics of the available current technologies acknowledge that given what we know about plantand fungal biology, these underground linkages, "should be common" (Karst et al. 2023), and theindications of the science are clear - this issue is not constrained to one or a few environments orbiomes.B. The Forest Service must include plan components that maintain or restore soils, particularly soil biotaThe 2012 National Forest System Land Management Planning Rule (Planning Rule) requiresrevised or amended land management plans (i.e. Forest Plans) to provide for ecologicalsustainability, including ecosystem integrity, which necessitates "standards or guidelines, tomaintain or restore the ecological integrity of terrestrial and aquatic ecosystems." 36 C.F.R.[sect]219.8(a)(1). Further, the Forest Plans must include components, including standards orguidelines, to maintain or restore soils. [sect]219.8(a)(2)(ii). Mycorrhizal fungi, known to beecological drivers of soil productivity, erosion protection, sedimentation protection, and waterquality and resources, receive no standards or guidelines. Further, in order to ensure ecosystemintegrity the 2012 Planning Rule directs the agency to include plan components to maintain orrestore function. [sect]219.8(a)(1). Function is specifically defined as "Ecological processes thatsustain composition and structure, such as energy flow, nutrient cycling and retention, soildevelopment and retention[hellip]." ([sect] 219.19). The 2012 Planning Rule also requires Forest Plans toinclude standards or guidelines "to maintain or restore the ecological integrity of riparian areas."[sect]219.8(a)(3). Although mycorrhizal fungi are known to play important roles in riparianecosystems, protection against sedimentation, and filtering and protecting water resources, theyreceive no attention in the riparian-specific portions of the plan or project either. And althoughthis section of the rule requires, "plan components, including standards or guidelines, to guidethe plan area's contribution to social and economic sustainability, taking into account:[hellip](4)Ecosystem services[hellip].," the Revised Assessment fails to acknowledge the vast scientificliterature regarding mycorrhizal-provided ecosystem services, and the Proposed Action lackssufficient standards or guidelines providing for their protection and restoration. [sect] 219.8(b).The need for better and additional plan components with supporting analysis in the Revised PlanEIS is further demonstrated by looking at the Forest Service Manual (FSM). It includes a specificobjective that "Ecosystems are ecologically or functionally restored so that over the long termthey are resilient and can be managed for multiple use and provide ecosystem services, includingbut not limited to carbon storage and sequestration." (FSM 2020.2). Further, the manual directsthat "Responsible soil stewardship [promotes and sustains], biological and hydrologic function,[and that], chemical, physical, and biological soil properties [will all be used to] assess existingsoil condition for watershed condition and ecological assessments." (FSM 2550.3). Yet, as amain driver of restoration, resiliency, and ecosystem services including hydraulic lift and waterinfiltration, retention, and efficient use by vegetation, mycorrhizal fungi are nowhere to be foundin the Revised Assessment or the Proposed Action. In fact, no biological aspects of the soilappear to be included in the monitoring section.In addition, the manual defines biological properties that support "the productive capacity of theland, its ecological processes, such as hydrological function of watersheds, and[hellip] ecosystemservices" as part of desired soil conditions. (FSM 2550.5). This in fact seems to specifically pointto soil biota such as mycorrhizal fungi as something to be monitored and supported.The Forest Service also directs the following: "Use adaptive management (FSM 1905) to designand implement land management activities in a manner that achieves desired soil conditions andobjectives[hellip].," monitor soil conditions and trends to ensure that soil and water conservationpractices are implemented and effective[hellip], [and] "Determine how changes in soil properties willaffect desired soil conditions and objectives related to ecosystem function." (FSM 2551.03). Yet,it is unclear how the agency could possibly meet this direction without the necessary plancomponents, which appear to be lacking in the PA, especially in regards to monitoring, and theprotection and restoration of mycorrhizal fungi. The omission is glaring given the extensiveevidence of the roles they play in ensuring ecosystem services, productivity, and unimpairedfuture functioning of the land in all the ways laid out in the Forest Service Manual. In fact, themanual section on monitoring calls for monitoring sufficient "to determine the soil condition andthe cause and effect

relationships associated with those conditions[hellip]." [and] "Use soil qualitymonitoring to validate and refine management decisions." (FSM 2551.13) The informationcollected allows land managers "to determine if land management plan desired conditions arebeing achieved." Id. This section clearly states, "The major objective of soil quality monitoringis to ensure that ecologically sustainable soil management practices are being applied[hellip]. " [and]"Monitoring is conducted to detect changes in physical, chemical, or biological soil propertiescaused by management activities." Id. Since no monitoring of mycorrhizal fungi is included inthe PA, clearly the intent of the manual is not being carried out.The manual also states that "current science and key soil functions and attributes/indicators/soilproperties representing those functions" should be considered in developing land managementmonitoring, standards and guidelines. (FSM 2551.3). Despite this, at least one entire Kingdomwhich helps to determine soil functioning, and enormous scientific evidence demonstrating thekey soil functions that mycorrhizal fungi in particular contribute appears to be entirely ignored."The focus of forest plan monitoring is to gauge the progress toward achieving or maintainingthe desired conditions and objectives." (FSM 2551.61). When these desired conditions andobjectives, as set forward by the FSM, clearly include key biological players in soil functionsuch as mycorrhizal fungi, how can they be resoundingly ignored?Not only does the FSM clearly state in all the passages above, that key soil biology such asmycorrhizal fungi should be the focus of desired conditions, standards and guidelines, andmonitoring. The section of the FSM that deals with invasive vegetation also makes it clear thatthese key players must be monitored, protected, and restored. The manual also clearly states thatobjective must be to:limit the adverse effects of those infestations on native species, human health, and otherNational Forest System resources [and] implement restoration, rehabilitation, and/orrevegetation activities following invasive species treatments to prevent or reduce thelikelihood of the reoccurrence or spread of aquatic or terrestrial invasive species.(FSM 2902). Based on the overwhelming scientific evidence, this simply cannot be achievedwithout restoring diverse communities of native mycorrhizal fungi appropriately paired to siteconditions and planting materials after most invasions by exotic vegetation. In fact, the ForestService clearly acknowledges that integrated pest management requires "an ecologically-basedholistic strategy that relies on natural mortality factors, such as natural enemies, weather, andenvironmental management, and seeks control tactics that disrupt these factors as little aspossible [specifically including] biological[hellip]techniques." (FSM 2902). Based on anoverwhelming amount of the best available scientific information, mycorrhizal fungi are key toboth managing invasive vegetation, and restoring full function and diversity after invasions. Yet,again, they appear nowhere in this project or forest plan.In sum, the Proposed Action lacks adequate components to incorporate the Forest Service's owndirectives, and the Revised Assessment failed to address the issues we raised, includingevaluating the ecosystem services mycorrhiza help support. The Forest Service must addressthese gaps in any alternative considered in the Revised Plan's EIS and its supporting analysis thatmust demonstrate how the current Forest Plan provides for ecological sustainability of soils andnative mycorrhizal fungi.XIV. GrazingThe issue of public land livestock grazing is a great concern for our organizations, and the PAprovides a number of plan components, including standards and guidelines, meant to achieve theapplicable desired conditions, but the PA lacks a specific desired condition that actually statesgrazing operations will not degrade habitat conditions and will support ecosystem integrity. "Atthe writing of the proposed action, there are 11 active grazing allotments occupying just over200,000 acres in the LNF." PA at 102. It is important for the agency to ensure the Revised Planmeets the preliminary need to change (PNC), and here the PA fails. For example, there is a needto clearly provide adequate guidance for vacant allotments, which the PNC describes as"guidance for the management of vacant allotments" (PNC, 18). Yet, the PA lacks sufficientguidance that directly addresses vacant allotments and/or canceled, waived, or relinquishedpermits. One very effective way to achieve desired conditions in the livestock program is toretire and/or close vacant allotments when the opportunity arises. As the LNF has acknowledgedin previous documents associated with this plan revision, livestock grazing activities have andwill likely continue to decrease across the forest in the years to come. One of the sure fire waysto reduce the impacts of livestock grazing and achieve a desired condition that supportsecosystem integrity is to reduce this activity through allotment closure when the opportunityarises. There we propose a standard that directs the following:

* Grazing privileges that are lost, waived, relinquished, or canceled, must have the attached AUMs held for watershed protection, predator conflict reduction, and wildlife habitat in perpetuity.

Further, another need from the PNC that does not appear to have been carried over into the PA isthe inclusion of

components that "minimize intermingling and conflicts between domestic andwild animals" (PNC, 18). The PA should include standards that ensure the implementation and/orincorporation of non-lethal conflict reduction measures into all grazing permits, AMPs, andAOIs. In particular, there needs to be forest-wide management standards that ensure livestockpermittees contribute to the recovery of threatened and endangered species, such as grizzly bears.Standards should include specific, enforceable measures to reduce livestock-grizzly conflict.Here is a list of relevant permit provisions that would satisfy this:

* Electric fencing around calving areas;
* Required removal of birthing material;
* Required removal and composting of carcasses;
* Required range riding;
* Hazing carnivores away from livestock;
* Delaying turnout until calves are greater than 200 lbs.;
* Delaying turnout to coincide with native ungulate calving season.

Not only would these provisions facilitate adaptation to the ongoing recolonization of the LNFby grizzly bears, some of these measures (i.e. required range riding) would also help to achieveother plan components, like the improvement of riparian zones and the prevention ofgrazing-caused degradation. Range riders can monitor livestock and keep them moving before anarea is overgrazed or otherwise negatively impacted, while also providing a predator deterrent.Overall, the PA fails to adequately address the multiple streams on active grazing allotments thatMontana DEQ lists as impaired under the Clean Water Act due specificallyto livestock grazing.For example, Sixmile Creek, which runs through the Edith-Sixmile Allotment, is listed asimpaired by DEQ due to "Alteration in stream-side or littoral vegetative covers" as a result of"Rangeland Grazing". Similarly, the Little Thompson River, which runs through the LittleThompson Allotment is listed as impaired by DEQ due to "Nitrogen", "Phosphorous","Alteration in Streamside or Littoral Vegetative Cover", and "Sedimentation/Siltation" all ofwhich are attributed to "Grazing in Riparian or Shoreline Zones." Finally, Henry Creek on theHenry Creek Allotment is listed as impaired due to "Alteration in stream-side or littoralvegetative covers" and "Sedimentation/Siltation" due to "Grazing in Riparian or ShorelineZones." 124 The Forest Service must disclose and analyze these and other livestock causedimpairments in its Revised Plan EIS, and then include standards and guidelines to incorporateexplicit measures into AMPs, AOI's and permit terms and conditions that seek to immediatelyrectify this problem[mdash]up to and including full exclusion of livestock from riparian areas. Theseimpairments have existed on these streams for a decade or more, clearly implicating currentgrazing management on the LNF. The contributions to these impairments by LNF authorizedgrazing must be quantified, acknowledged, and addressed through substantive changes to thegrazing regime on these allotments.Finally, the PA must include specific provisions to address long-standing deficiencies in how theForest Service monitors active grazing allotments. What evidence there is of past monitoring onthe LNF is sparse and it is clear that this crucial management tool has not been undertaken at thelevel needed to ensure livestock operations are not causing ecological damage, especially when itcomes to riparian areas. These areas are particularly sensitive to livestock impacts and areecologically crucial for a host of species. Implementation of a required annual monitoring regimefor each and every active allotment is the only way to ensure protection of these areas. A biennialForest Plan monitoring report is insufficient. Consistent, required monitoring is the only way toensure that permit terms and conditions are being adhered to. As this coalition previously notedin comments provided for the Draft Assessment, the LNF has not implemented an effective andreliable system. The complete lack of monitoring documents in FOIA releases going backseveral years clearly shows that it is simply not occurring on a regular and consistent basis. Thisplan revision is an opportunity to remedy that by implementing a structured monitoring program.ConclusionWe appreciate the Forest Service's time and effort carefully considering and addressing ourcomments. As the agency moves forward developing its range of alternatives and preparing theDraft EIS, our organizations are available to discuss any portion of these comments and providesupporting information, including GIS files.Cordially,[see letter for names, titles, and addresses of authors]Exhibits (enclosed)1. March 12, 2024 Leader's Message2. The Lolo-Bitterroot Partnership: A Citizen Plan For Fish, Wildlife & Forests3. FLBCTF et al. comments on Lolo Assessment and SCC4. WildEarth Guardians. 2020. The Environmental Consequences of Forest Roads andAchieving a Sustainable Road System .5. Bader M, P Sieracki. 2024. Natural Grizzly Bear Repopulation in the Greater BitterrootEcosystem. Technical Report 01-24.

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