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First name: Jim
Last name: Miller
Organization: Friends of the Bitterroot
Title: President
Comments: August 23, 2021

Objection Reviewing Officer

USDA Forest Service Northern Region

26 Fort Missoula Road

Missoula, MT 59804

Submitted via email to appeals-northern-regional-office@usda.gov

And Matt Anderson at matthew.anderson3@usda.gov

RE: Objection to the Mud Creek Project Draft Decision and Finding of No Significant Impact

To the Objection Reviewing Officer,

Friends of the Bitterroot (FOB), WildEarth Guardians, Sierra Club, Friends of the Clearwater (FOC), Alliance for the Wild Rockies (AWR), and Native Ecosystems Council (NEC) respectfully submit this objection to the U. S. Forest Service's July, 2021 draft decision notice (DDN), finding of no significant impact (FONSI), and the revised 2021 environmental assessment (FEA) for the Mud Creek Project on the West Fork Ranger District of the Bitterroot National Forest. Under the Draft Decision, the Forest Service's selected alternative includes estimated potential treatments of 4800 regeneration cuts, 8900 acres of commercial treatments, 26, 282 acres of non-commercial treatment, 4800 acres of prescribed fire site preparation, 28,235 acres of prescribed fire low severity, and 12,125 acres of prescribed fire mixed severity. It includes 22 or more openings > 40 acres no greater than 200 acres, to be located in general focal areas ranging from 71 acres to 585 acres. Project proposes 8.95 miles of specified road construction, 33.8 miles of temporary roads,a 0.4 mile segment of co-incident route would be closed yearlong to all motorized traffic including trail vehicles. FEA at 39, Table 10. Of the approximately 11.3 miles of undetermined roads, approximately 0.76 miles of undetermined roads needed for future management activities would be added to the NFS road system as maintenance level 1 roads, some road segments in this category would be decommissioned as roads, added to the National Forest System trails system, and managed as trails open seasonally to vehicles 50 inches or less in width, and others would be stored or decommissioned. Id.

We incorporate here the Mud Creek scoping comments submitted by Friends of the Bitterroot dated October 7, 2019, the Mud Creek Draft Environmental Assessment (DEA) comments submitted by Friends of the Bitterroot, WildEarth Guardians, Alliance for the Wild Rockies and Native Ecosystems Council (FOB et al), the Mud Creek

DEA comments submitted by Alliance for the Wild Rockies, Native Ecosystems Council, and Friends of the Bitterroot (NEC et al), Mud Creek DEA comments submitted by the Alliance (AWR et al), Mud Creek DEA comments submitted by Sierra Club, and Mud Creek DEA comments submitted by Friends of the Clearwater, Alliance for the Wild Rockies, WildEarth Guardians, Native Ecosystems Council, and Friends of the Bitterroot (FOC et al) dated April 20, 2021. Members of Friends of the Bitterroot have been involved since the project inception. They attended field trips and submitted pre-scoping and scoping comments as well as Draft Environmental Assessment (DEA) comments and objections. We incorporate member comments on Mud Creek DEA submitted by Michael Hoyt, Jeff Lonn, Larry Campbell, Michele Dieterich, and Jim Olsen, and member objections to Mud Creek DDN submitted by Michael Hoyt, Jeff Lonn, Jim Olsen, Michele Dieterich, and Larry Campbell. We incorporate Jeff Lonn's pre-scoping (dated 11/1/2018) and scoping comments (dated 9/30/2019). We incorporate and attach FOB Gold Butterfly SEIS comments (dated August 8, 2021) , FOB Gold Butterfly Objection (dated August 2, 2019), AWR Gold Butterfly SEIS comments (dated August 9, 2021), and FOB scoping comments for forest-wide EHE amendment (dated 2/10/2020).

Because the project area is a key connectivity zone for grizzlies, we also include Mattson (2021) (Attachment P), a report investigating grizzly bear recovery in the Bitterroot Ecosystem. As Mattson (2021) explains, grizzly bear habitat quality in the Bitterroot Ecosystem is potentially outstanding, but strong steps are needed immediately to remove the human impediments to natural recovery. Recovery of the overall grizzly bear population in the lower 48 states requires its population to grow and its range expand, especially in anticipation of the impending risk of climate change.

Our comments carry over to the objection and this objection is supplemental to previous comments.

References were mailed to the Region 1 Office address listed above. Attachments, incorporated comments outside of this project, and previous comments, etc. are sent electronically with this document.

The project area encompasses approximately 48,486 acres in the Bitterroot National Forest (BNF) and includes the entire West Fork Bitterroot River-Rombo Creek watershed and portions of the Nez Perce Fork-Nelson Lake, Little West Fork, West Fork Bitterroot River-Lloyd Creek, Lower Blue Joint, and West Fork Bitterroot River-Painted Rocks Lake watersheds in the Bitterroot Mountain Range. The area is accessed by the public mainly from the West Fork Highway and the Nez Perce Road. The responsible official is the Bitterroot National Forest Supervisor Matthew Anderson. As required by 36 C.F.R [sect] 218.8(d):

Lead objector

Jim Miller, President

Friends of the Bitterroot

PO Box 442

Hamilton, MT 59840

millerfobmt@gmail.com

(406) 381-0644

And for:

Mike Garrity, Director

Alliance for the Wild Rockies

PO Box 505

Helena, MT 59624

wildrockies@gmail.com

And for:

Adam Rissien, ReWilding Advocate

WildEarth Guardians

PO Box 7516

Missoula, MT 59807

406-370-3147

arissien@wildearthguardians.org

And for:

Summer Nelson, Chapter Director Montana Chapter Sierra Club

P.O. Box 7201 Missoula, MT 59807

And for:

Eric Willadsen (he/him)

Conservation Program Manager

Idaho Chapter Sierra Club

Boise, ID, 860-985-7501

Shoshone-Bannock Traditional Lands

And for:

Sara Johnson, Director

Native Ecosystems Council

PO Box 125

Willow Creek, MT 59760

sjjohnsonkoa@yahoo.com

And for:

Jeff Juel, Montana Policy Director

Friends of the Clearwater

900 Rollins St

Missoula, MT 59801

jeffjuel@wildrockies.org

This objection is timely filed. Notice of the Draft Decision Notice and FONSI was published in the newspaper of record on July 7, 2021. The deadline to submit objections is thus August 23, 2021.

Friends of the Bitterroot (FOB), WildEarth Guardians, Sierra Club, Friends of the Clearwater (FOC), Alliance for the Wild Rockies (AWR), and Native Ecosystems Council (NEC) submitted timely comments regarding the DEA of the Mud Creek project. FOB submitted comments concerning the scope of the proposed Mud Creek project on October 7, 2019 . Our comments advocated for thoughtful management of the agency's road system, its associated impacts, and the overall need to protect and improve the ecological integrity of watersheds and wildlife habitat in the planning area. Each of the objectors has organizational interests in the proper and lawful management of forest resources, including the road system and its associated impacts on the Bitterroot National Forest's wildlife and wild places.

OBJECTIONS

Since the DEA was published, the ATV loop trail was reduced. We agree with this change. However, overall our concerns raised in past comments remain unaddressed.

Issue: Because the project has significant impact, the Forest Service must prepare an environmental impact statement for the Mud Creek Proposal

FOB et al noted this issue on pg 8 and FOC et al addressed this issue on pp. 1-2 of its April 20, 2021 comments on the project.

Mud Creek is not a single project, but rather a program of, or plan for, proposed treatments to be implemented over a long time frame:

The proposed action describes a suite of activities available to manage the project area over a period of approximately 20 years.

Draft Decision Notice ("DDN") at 4. We thus will refer to it as the "Mud Creek plan" or "plan"

In a project area of 48,486 acres (FEA at 1), up to 4800 acres (7.5 square miles) could be commercially cut for regeneration and up to 8900 acres (13.9 square miles) could undergo commercial intermediate cuts. FEA at 22. Non-commercial activities could be conducted on over 26,000 acres, and approximately 45,000 acres would be burned. FEA at 14. More than one entry would be needed in some areas. Id. at 10. As much as 43 miles of new specified permanent and temporary road would be constructed. Id. at Table 10, p. 39. The Response to Comments at B-13 states: "There is no limit on commercially treated acres in the Took Ridge Saddle area".

The Mud Creek Plan would include openings up to 200 acres (FEA at 31). Such openings could have considerable impacts to various resources, especially wildlife habitat and scenery.

Four species listed under the Endangered Species Act -- bull trout, lynx, whitebark pine, and grizzly bears -- would be affected by the proposal. There would likely be an adverse impact to Bull Trout and its critical habitat from implementing the project. DDN at 10.

[The Forest Service, for the first time on the Bitterroot National Forest, uses a condition-based approach on a landscape scale with multiple site-specific amendments to the forest plan, under which site-specific impacts are not disclosed at the NEPA and project decision stage. (See more detailed argument below.) This may set a precedent for future projects on this national forest and even in Forest Service Region 1.]

The proposed Plan meets some of the criteria for significant intensity, mandating an EIS. See 40 CFR 1508.27(b). In any case, a program of this size and duration is likely to have a significant effect on the human environment, and an EIS must be prepared.

Suggested remedy:

An EIS must be prepared that discloses site-specific impacts and the effectiveness of possible mitigation measures (see below) prior to approval of any ground-disturbing or vegetation-altering activity.

Issue: The Mud Creek EA violates NEPA

FOB et al addressed this issue on pg 19 and FOC et al addressed this issue beginning on p. 2 of its comments of April 20, 2021.

The Mud Creek Plan would implement a series of activities to occur over 20 years, as is discussed above. It is essentially a program of work. The Forest Service could have prepared a programmatic NEPA document to disclose the impacts of the overall program, and then follow up with additional NEPA documentation, as appropriate, for subsequent individual projects. But the agency instead uses a "condition-based" approach, under which specific treatment units and details of how each unit would be treated are not identified until a later "implementation process":

The location in which treatments occur will be determined based on conditions at the time of implementation.

DDN at 3. Step 1 of the implementation process is to determine what actual activity would be implemented. FEA Appendix B at 2. Types of treatments could be "refined" during implementation. FEA at 11. There is no limit on how far proposed treatment could be "refined", meaning treatments considerably different from those described in the FEA could be implemented, with no disclosure of the impacts.

Identification of a specific project(s) and its (their) location(s) would not occur until after the project had already been approved. There would be no additional NEPA documentation for the individual projects carried out under the Mud Creek Plan. The public would have 30 days to comment on the individual projects, but the overall project would already have been approved, ensuring that at least some activity would likely be approved, regardless of the still-undisclosed impacts. Interested parties would not have had an opportunity to review any analysis of impacts of such proposals prior to their approval because such analysis would not be done. And there obviously would be no opportunity for interested parties to administratively challenge a site-specific project for which they had issues and concerns.

Some activities possibly not covered in the existing EA could even be approved during implementation:

The Forest Service would host annual implementation workshops at which partners and the public would have the opportunity to submit proposals for new activities[hellip]

FEA at 13; see also FEA Appendix B at 4. The impacts of any new activities that were approved and implemented would not have been disclosed, violating NEPA.

During the implementation process, additional mitigation may be identified. FEA Appendix B at 5, 6. The effectiveness of any new mitigation measures would not have been evaluated, and it would not be evaluated prior to approval of a site-specific project.

Even the implementation process itself may change during the life of the Mud Creek Plan:

This implementation process is meant to be a 'living' document and may need to be adjusted as we learn more through the implementation of each activity. As activities are designed, the process may be refined, and new technology or expertise may be used.

FEA Appendix B at 1. Any new technology or expertise could change our knowledge about the possible impacts of implementing a project, and even whether it is appropriate to implement said project. However, the new expertise and technology would not have been considered in the Mud Creek plan approval, thus the public would not have a chance to review it prior to plan approval. But under the condition-based plan, the Forest Service could still implement any project, regardless of what the public thought, or the science indicated, was appropriate.

With the lack of site-specific information, it is impossible to fully disclose the impacts, because the details and location of each treatment unit is not known at the time NEPA is being performed. Impacts could vary based on what type of treatment is done and where it is located. The FEA identifies almost the entire project area outside of roadless areas and the wilderness study area as "General Locations Available for Commercial Harvest Treatment Types in the Mud Creek Project Area". See id. at Figure 4, p. 23.

Also, the Forest Service has identified "'focal areas,' for treatments that could create openings from 41 to 200 acres in size". FEA at 31. The 22 focal areas range in size from 74 to 585 acres. FEA Table 9 at 34. At the time NEPA is being done, the public does not know how large the created openings will be, nor where they would be located within the focal areas, nor exactly what treatment would be done in each area, since "focal areas are not limited to one type of regeneration treatment or to regeneration treatments only". FEA at 32.

The acreage to be treated in any part of the project area is uncertain due to the amount of money available. For example, for non-commercial activities, "[a]nnual area treated is expected to range from 500-4,000 acres depending on funding. FEA at 24.

Impacts, such as those to wildlife habitat, scenery, soils, and watershed, could vary considerably based on the

size range and possible location in the focal areas, and by when they are implemented. Several of the focal areas are adjacent to at least one other focal area (see FEA Figure 6, p. 33). Thus under the implementation process, projects creating large openings could be close to each other, and the impacts of two or more large openings in a small area would not have been analyzed.

The EA admits that certain impacts could be discovered at the implementation stage that would necessitate additional protective measures: Certain resources concerns

are location specific and may require additional mitigations prior to ground disturbing activities[hellip].Mitigation measures are identified during or post-effects analysis (reactive)[hellip] The line officer will review and approve mitigation measures prior to their adoption.

EA Appendix B at 6-7. Case law requires NEPA documents to discuss mitigation:

An agency must analyze mitigation measures in detail and explain how effective the measures would be. Northwest Indian Cemetery Protective Ass'n v. Peterson, 795 F.2d 688, 697 (9th Cir.1986), rev'd on other grounds, Lyng v. Northwest Indian Cemetery Protective Ass'n, 485 U.S. 439, 108 S.Ct. 1319, 99 L.Ed.2d 534 (1988). "A mere listing of mitigation measures is insufficient to qualify as the reasoned discussion required by NEPA." See also Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 352, 109 S.Ct. 1835, 104 L.Ed.2d 351 (1989). ("[hellip]omission of a reasonably complete discussion of possible mitigation measures would undermine the "action-forcing" function of NEPA. Without such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse effects.") That requirement is implicit in NEPA's demand that an EIS must discuss " 'any adverse environmental effects which cannot be avoided should the proposal be implemented.' " Id. at 351-52, 109 S.Ct. 1835 (quoting NEPA, 42 U.S.C. [sect] 4332(C)(ii)); see also 40 C.F.R. [sect] 1502.16(h) (stating that an EIS must contain "[m]eans to mitigate adverse environmental impacts").

With no analysis of impacts of the specific projects, the impacts of implementing the Mud Creek Project have not been disclosed. The possible effectiveness of mitigation measures will not have been evaluated because such measures will be determined at the implementation stage, after NEPA has been completed. Without knowing the site-specific impacts, cumulative impacts also cannot be determined.

In short, there would be no accountability for projects done under the Mud Creek Plan. The Forest Service wants a free pass, basically to do anything it wishes in the Mud Creek Plan area based on only a cursory environmental review. That does not comply with NEPA.

This condition-based approach was specifically rejected by a District Court in the Ninth Circuit in Southeast Alaska Conservation Council v. U. S. Forest Service et al, Case No. 1:19-cv-00006-SLG, decided March 11, 2020 (Decision). This case concerned the Prince of Wales Landscape Level Analysis Project on the Tongass National Forest in Alaska (Attachment A).

This project was similar to Mud Creek in that condition-based management was used. (Decision at 9). Project location was to be determined during the implementation phase (ibid.). Activity cards were used to describe potential activities (Id. at 5). A maximum treatment level (of old growth) was stated, but the project documentation did not say where in a larger area this treatment could occur. See Decision at 20. This is similar to Mud Creek specifying limits on regeneration and intermediate harvest (FEA at 22) but not stating where in the much larger project area these activities would occur.

The court stated that the "critical inquiry in a large, multi-step project is not whether the project's site-specific

impact should be evaluated in detail, but when such detailed evaluation should occur," citing California v. Block, 690 F.2d at 761. The court also cited City of Tenakee Springs v. Block, 778 F.2d 1402, 1407 (9th Cir. 1985): "[w]here there are large-scale plans for regional development, NEPA requires both a programmatic and a site-specific EIS, (citing 40 C.F.R. [sect] 1508.28, 1502.20; Kleppe v. Sierra Club, 427 U.S. 390, 409-14 (1976))); cf. Prot. Our Cmtys. Found., 939 F.3d at 1039 (explaining that "a site-specific project demands site-specific analysis" and that '[a]gencies cannot rely on a general discussion in a programmatic EIS or other document to satisfy [their] NEPA obligations for a site-specific action')." Decision at 16-17.

The court emphasized the need for site-specific NEPA analysis and disclosure: "NEPA requires that environmental analysis be specific enough to ensure informed decision-making and meaningful public participation", citing City of Tenakee Springs v. Block, 778 F.2d 1402, 1407-08 (9th Cir. 1985). Decision at 22.

The Forest Service maintains that the possible impacts from the Mud Creek project have been adequately disclosed in the FEA because the analysis there assumes that the maximum possible treatment, and thus the maximum impacts, would occur. RTC at B-66. However, the disclosure of impacts in the EA is cursory; it is not tied to specific areas. Impacts from implementing an activity in one area may be different from those in another. But of course, no one can say for sure because at least no one outside the Forest Service knows what will be implemented or where.

[[Note that the Alaska court found the maximum impacts approach inadequate under NEPA (see Decision at 25-33) because the Forest Service "ha[d] not yet taken the requisite hard look at the environmental impact of site-specific timber sales". Decision at 32. The court noted that this applied to an EIS (Decision at 29-30), which the Forest Service needs to prepare for Mud Creek, as is argued above.]]

Suggested remedy:

The Forest Service must disclose impacts of site-specific projects in an EIS prior to approval of the Mud Creek plan and any projects proposed to be implemented under it prior to the commencement of any ground disturbing or vegetation-altering activity in any given area. It could accomplish this by preparing a programmatic EIS for all activities proposed in the Mud Creek area, then preparing, as appropriate, additional NEPA documentation for individual projects.

Issue:Proposed prescribed fire in roadless areas and a Wilderness Study Area (WSA) appear to contradict the project purpose, and the possible impacts of prescribed fire on WSAs and Roadless areas have not been fully disclosed.

FOC et al expressed concern about possible impacts to roadless areas on p. 40 of its April 20, 2021 comments.

For each of the three roadless areas where activities are proposed, the description of roadless characteristics or wilderness attributes states the following:

Natural Integrity

Fire suppression currently alters the natural integrity of the recommended wilderness areas. Fire is a natural condition on the landscape and was typical of high frequency and mixed to low severity, which maintained open ponderosa pine, lodgepole pine, and Douglas-fir stands. Currently, fire suppression has resulted in stands of higher tree density and higher mortality rates above historic averages due to an increase of insect and disease activity. These conditions have the potential to increase fire severity and intervals beyond historic regimes which may create the potential for more severe wildfires.

Roadless Report at 6-8.

The lower elevations of the roadless expanse are said to be "thickly forested". Id. at 5.

But even with this increased tree density, the Forest Service proposes to burn these areas.

Under the proposed action, prescribed fire would be implemented in roadless areas and WSAs - 8326 acres of IRAs and 6575 acres in WSAs. Roadless Report at 9. The areas to be burned would not first be thinned to reduce fuels as part of fire preparation, except for a very small acreage (0.006 percent of the roadless expanse, ibid.) that would be non-commercially thinned for whitebark pine recovery.

Even with the increased tree density, "[p]rescribed fire treatments are anticipated to have low to mix (sic) intensity fires which are typical of the forest ecosystems in the area[hellip]". Ibid. Intuitively, it would seem that fires in these areas of increased tree density would not be low severity, and would likely result in higher severity fires over larger areas than occurred under the purported natural disturbance regime, which the proposed burning is supposedly designed to achieve or maintain. Indeed, the whole reason for doing the treatments in the first place is because:

The[existing] conditions have the potential to increase fire severity and intervals beyond historic regimes which may create the potential for more severe wildfires.

Ibid. This apparent contradiction is not addressed in project documents. Either the agency risks causing an undesirable result (unnaturally larger-scale high-intensity fire), or the description of the existing conditions is inaccurate. If the latter is the case, then the proposed actions in roadless and WSA are not needed.

Also, details on how areas slated for prescribed fire in the roadless areas and WSA are lacking. (See FEA 25-28.) Usually, control lines are constructed to reduce the chances that a deliberately set fire escapes prescription and burns areas outside of what was intended or burns more intensely than desired. Control lines can be constructed by hand or machine. Road access to areas reasonably close to where the burns will be conducted is likely to be needed to allow crews with their tools to reach the proposed burn areas and to be able to fight any fires that escaped prescription.

Several miles of road already exist along the boundary of, and inside, the Blue Joint Roadless Area and Wilderness Study Area. Roadless Report at 7. A dozer-constructed trail exists in the Allan Mountain Roadless Area. Id. at 6. It would be logical to extend these roads into the IRA and WSA to provide access for fire and whitebark pine thinning. The Selway-Bitterroot Roadless Area appears to be intact; road construction to at least the boundary of this area might be necessary for thinning and to safely administer prescribed fires.

Control lines can remain on the ground for some time after the fire is implemented because the soil is compacted, which will delay or retard the establishment of vegetation. In the meantime, the lines can be used by motorized recreationists, introducing or increasing the illegal use of motor vehicles in the WSA and IRAs. This could in turn degrade roadless area and potential wilderness characteristics. We find no discussion of this issue in the project document.

The proposed burning appears to contradict the purpose of reducing the chances of high intensity fires that the project is supposedly intended to prevent. Possible effects on roadless areas and WSAs from accessing the proposed burn sites have not been fully disclosed, and the project documentation is thus deficient.

Suggested remedy:

Project NEPA documentation must show how proposed burning in the roadless areas and WSA is safe, appropriate, and in alignment with the Mud Creek plan, purpose and need. It must discuss how burn sites will be accessed and how control lines will affect roadless area and WSA integrity, especially with regard to possible motor vehicle incursion.

Issue: Purpose and need is narrowly crafted to reject reasonable alternatives, and ignores public concerns and best available science.

FOC et al at 5-6 states:

The EA makes a big deal about the proposed activities supposedly achieving or moving toward vegetation-related "Desired Conditions" as drivers of the proposal, yet where the FS gets these desired conditions is unclear. The Forest Plan has practically no Desired Conditions resembling those of the EA. The Forest Plan FEIS does not evaluate a scenario of achieving any of the EA's vaguely described desired conditions. The CBIA Plan's "desired conditions" are not in accord with Forest Plan, having been adopted outside of legitimate NEPA and NFMA processes.

and

However, the EA fails to define "resilience" in any objective, measurable terms, and it also does not define significant other terminology in the above definition to explain, e.g., how it can be determined when "components and processes are functioning properly" and when they are not. So the EA cannot cite any data that supports its claim of inadequate resilience[mdash]because what is claimed to be deficient cannot be measured. It seems the FS wants no accountability in regards to this issue.

and

So the FS is thus free to include an arbitrary scope of activities in response to its nebulous purpose and need. The FS has arbitrarily decided everything else (including No Action) that isn't their proposed vegetation manipulations are outside the "scope" of the Purpose and Need. So we have that the "purpose of the Mud Creek project" is to "Improve landscape resilience to disturbances (such as insects, diseases, and fire) by modifying forest structure and composition and fuels" and " there is a need to: Reduce stand densities, increase age class diversity, and favor shade intolerant species to promote resilience to stressors (e.g., drought, insects, and diseases). (Emphases added.)

Forest Service (FS) response is merely that the responsible official can decide upon the purpose and need. Meeting notes for the November 16, 2018 IDT meeting state, "A well-defined 'purpose and need' statement narrows the range of alternatives that may need to be considered. (Attachment B)" Here FS personnel make it clear that their intention was to create a narrow purpose and need to eliminate the necessity to address public concerns and the requirement to consider all reasonable alternatives.

In fact, the purpose and need came long after the August 2018 meeting minutes that seem to put the cart before the horse, "Current planning is to have a decision signed 3rd quarter of FY2020 with timber volume contributing towards FY2021 target." Preliminary work would be "conducted by Silviculture, Timber, and Fuels this summer (2018)." We note here that no biologists, or road specialists were involved. It appears there was little concern for habitat conditions or the road system in preliminary analysis. Minutes go on to say the purpose and need would be "developed later in the fall/winter (Attachment C)." From these minutes, it is clear that the purpose of the project is politically mandated timber targets rather than forest health. And finally, the Nov 16 2018 meeting agenda (Attachment D) lists the creation of the purpose and need long after the project was first discussed.

Shouldn't the need for a project come up long before discussion of timber targets?

FOC et al at 6 states, "[hellip]most of the rationale upon which the FS bases the Mud Creek EA's Purpose and Need have long since been challenged, and the agency has not responded forthrightly. The FS's lack of responsiveness in the EA violates NEPA's mandate to consider best available science in considering and analyzing a reasonable range of alternatives." The final EA and DDN offer no more scientific justification for the above concerns. It is still based on rationale that has not passed muster of the NEPA process.

The stated Purpose, "To 'improve resilience[hellip]. by modifying forest structure and composition' narrows the alternatives to a single choice, active management (to modify forest structure and composition)." That declaration prevents any other alternatives for consideration, even if other alternatives might be more effective. (FOB et al at 2-3)

Forest Service Response: The environmental assessment describes the need for the proposal (FSH 1909.15, chapter 40, section 41.21). The Forest Service has the discretion to determine that need, including its scope. For the Mud Creek project, the responsible official used the information about current conditions, as described in chapter 1 of the environmental assessment, to determine the purpose and need, including the broad types of resource management encompassed by the project. In the case of the Mud Creek project, the purpose and need includes management of vegetation and the road and trail systems. (Draft DN Appendix B, page 4)

The fact that the FEA provides only two alternatives, "do nothing" or "do what is proposed," is problematic. In 1997 the 7th Circuit Court held that "a federal agency' failed to examine the full range of reasonable alternatives[hellip]" (Simmons v. US Army Corps of Engineers - 1997, No. 97-1131). Other than the two offered, there are other obvious alternatives. The project should include those to keep from running afoul of NEPA directives.

Suggested Remedy:

The Agency must pull the FEA and provide additional alternatives for this project. Rationale for the project must be based on the best available science and terms that have passed NEPA process and the Forest Plan.

Comment: Interestingly, the Purpose and Need (PN) itemized in the Draft EA is different from wording included in the scoping documents which described the "original" Purpose and Need for this project as:

[middot] Improve landscape resilience to disturbance (such as insects, diseases, and fire) by modifying forest structure and composition, and fuels.

[middot] Design and implement a suitable transportation and trail system for long-term land management that is responsive to public interest and reduces adverse environmental effects.

[middot] Conduct a programmatic Forest Plan amendment related to elk habitat objectives.

A valid question is, "Why the change?" It is essential that the underlying PN for the proposed project be directly addressed. (FOB et al at 2-3)

Forest Service Response: The Forest Service has the discretion to determine the purpose and need. The Forest Service used internal review and comments received during the scoping comment period to refine and clarify the purpose and need. Apart from reorganization of the purpose and need statements for the sake of clarity, the only substantive change to the purpose and need was the removal of the purpose to conduct a programmatic forest plan amendment related to elk habitat objectives. The responsible official decided not to pursue a programmatic forest plan amendment in association with this project. (Draft DN Appendix B, page 7)

Commentary: The Agency declares "The responsible official has the discretion to determine the scope and scale of the project, and the responsible official has determined that the project, including the implementation process, is consistent with all laws, regulations, and policies, including the 2012 Planning Rule (36 CRF 219 et seq.)." The FS response ignored the paragraph preceding our comment and simply declared the "responsible official" can determine the purpose and need.

That response does not explain any connection between "roads and trails" and "resilience to disturbance and reducing crown fire hazard potential."

Suggested Remedy:

Please explain the logical connection between "roads and trails" and "resilience to disturbance and reducing crown fire potential."

Comment: It has been suggested that if the FS must do something positive to reduce wildfire (and to justify its existence), it should do everything in its power to restore the beaver to the lands the Agency manages. The beaver, a mere rodent, has repeatedly shown its water-management activities do more to reduce the effects of wildfire than the current assortment of Forest Service standard practices. (Goldfarb, 2020) (FOB et al at 7-8)

Forest Service Response: The Forest Service recognizes that beavers benefit the resilience of ecosystems within the plan area. However, because the purpose and need is focused on resilience of and fire risk in upland forested ecosystems, management of beaver populations is outside of the scope of this project. The final environmental assessment includes an alternative not analyzed in detail regarding management of beaver. (Draft DN Appendix B, page 15)

Commentary: The BNF Forest Plan includes Forest-wide Management Standard, "Beaver will be introduced into suitable riparian habitat." (FP, chapter II, page 20). The Mud Creek Project violates this requirement.

The Mud Creek Project Decision Notice (DN) states, "We designed the Mud Creek Project to address decreased resilience in forest ecosystems, decreased quality and abundance of important wildlife habitats, and resource concerns related to the existing roads and trails systems." (DN, page 2)

The Purpose and Need statement (DN, page 2) includes:

[bull] "Improve landscape resilience to disturbances (such as insects, diseases, and fire) by modifying forest structure and composition and fuels; and

[bull] "Design and implement a suitable transportation and trail system for long-term land management that is responsive to public interests and reduces adverse environmental effects."

Wildfire and forest roads are the most common disturbances on the BNF landscape which increase runoff. Beaver improve landscape resilience by helping to decrease stream siltation, providing flood control, and reducing stream channel instability.

Despite public comments and the inclusion of beaver reintroduction in the Forest Plan, there is no mention of beaver in any project file wildlife reports.

Suggestions regarding beaver introduction into the project area were immediately dismissed. The FS acts as if

the only two tools available to achieve its arbitrary Purpose and Need are chainsaws and fire (prescribed). Ignored are tools that nature provides such as the beaver.

Appendix A - Forest Plan Consistency, includes a chart which discloses the Standard: "Wildlife and Fish No. 10 - Beaver will be introduced into suitable riparian habitat." (Draft DN Appendix A, page 4)

The column labeled "Applicable to planning/ project development" indicates "Yes," the Standard is applicable.

The column labeled "Specific Design Feature, if needed" the chart indicates "Yes," and asks, "Have we ever done this?"

The column labeled "Activities/Areas where applicable" discloses that Forest Plan consistency requires the Standard to be applied, "Project area wide as required based on management area-specific criteria."

Because the Agency ignored the Forest Plan standard, the Mud Creek DN and FONSI violate the BNF Plan and violate NFMA. NEPA is violated by lack of analysis and full disclosure.

Suggested Remedy:

Pull the Decision Notice and FONSI and then redesign the project to include the mapping of suitable riparian habitat and the introduction of beaver into the project area.

For the environment to benefit from the reintroduction of beaver, the FS must consult with Montana Fish, Wildlife, and Parks and then fulfill the legal requirement for federal agencies to enforce the protection of wildlife and prohibit hunting and trapping of beaver and other aquatic mammals that inhabit waterways on federal public land. (Nie, 2017)

Comment:

Ubiquitous Project Specific Forest Plan Amendments

The continuously expanding patchwork of various "project specific" amendments has not been subjected to any cumulative impacts analysis

One ongoing problem with project specific FP amendments is that sideline legal limitations are removed without replacement limitations. This leaves the field wide-open, even erasing the field itself.

Also, removal of Standards has direct environmental effects on resources that have been protected, however unintentionally, by those Standards. These effects are real and are directly related to the action of waiving the Standards. You are required to analyze and disclose such effects in proper NEPA documents. (FOB et al at 45)

And (FOB et al at 9) "Including this proposed amendment is simply an attempt to sidestep BNF Plan requirements. Any and all amendments to the Forest Plan should be performed individually."

Forest Service Response: According to the 2012 Planning Rule, "Plan amendments may be broad or narrow,

depending on the need for change, and should be used to keep plans current and help units adapt to new information or changing conditions. The responsible official has the discretion to determine whether and how to amend the plan and to determine the scope and scale of any amendment" (36 CFR 219.13(a)). The responsible official has determined that the conditions in the project area warrant project-specific forest plan amendments. The amendment to the forest-wide standard for elk habitat effectiveness is based on the small size of 3rd order watersheds in the project area, which limits the distance of roads that may be present under the existing forest plan standard, which in turn limits forest management access and conflicts with other multiple use management objectives. The amendment to the forest plan record of decision direction regarding thermal cover in elk winter range is based on the variety of disturbance that has occurred in the elk analysis area since the finalization of the forest plan, including vegetation management, prescribed fire, and numerous wildfires, each of which has altered the spatial arrangement of cover types. Despite the fluctuations in thermal cover, the elk population in the elk analysis area has continued to trend upward, providing support for research that has become available since the finalization of the forest plan that suggests that thermal cover in winter may not be as important for elk as once thought (Cook et al. 1998). The amendments to the forest-wide and management area standards for old growth and coarse woody debris are based on the variety of forest types in the project area. The current forest plan description of old growth was derived from forest types different than those in the project area, and more appropriate scientific information to guide management direction for old growth in the project area is available. Similarly, the current management area direction for coarse woody debris retention does not recognize the differences in historic range of variation of coarse woody debris among forest types, as shown in current best available scientific information. (Draft DN Appendix B. page 16)

Commentary: According to the Draft Decision Notice, this proposed project includes three site-specific Forest Plan amendments (DN and FONSI, page 24):

[bull] Elk habitat standards related to road densities and thermal cover

[bull] Old growth standards

[bull] Coarse woody debris standards

The FS has not explained which characteristics of the project area are different from other portions of the BNF. It is possible the reason for these amendments is not because the project area is different but that the Agency wishes to circumvent the existing Forest Plan requirements.

In League of Wilderness Defenders v. Connaughton (Case No. 3:12-cv-02271-HZ), the U.S District Court (Oregon) declared:

"[hellip], a close reading of Lands Council v. Martin indicates there must be at least some characteristics unique to a site to support a site-specific amendment. Lands Council v. Martin, 529 F.3d at 1228. Here, Defendants and Intervenors fail to point to any characteristics unique to the Project area to support the site-specific amendment. Similarly, at oral argument, when asked specifically to explain what conditions existed within the Project area that supported the selection of a site-specific amendment, the parties were unable to provide any explanation other than the fact that the amendment was tailored and applicable only for the Project area.

Simply explaining the purpose of the Project, the desired conditions for the Forest, or stating that the amendment is site-specific because it was designed for a specific site, does not satisfy the rational connection between the facts found and the choice made required by Lands Council. Because the Forest Service failed to explain why it chose a site-specific amendment, the Court finds that the decision to enact a site-specific amendment was arbitrary and capricious and grants summary judgment to Plaintiffs on this claim."

Suggested Remedy:

Unless the FS can conclusively show what differentiates this project area from the rest of the BNF, this project should be withdrawn.

Implementation of this (or any other) proposed project should not be allowed until the Forest Plan is properly updated by following NFMA regulations.

Comment: This project's Purpose violates legal precedence and rules out all other alternatives for achieving the goal of "improving resilience" without providing justification. Additional alternatives to the proposed action should be specified. (FOB et al at 2-3)

Forest Service Response: The interdisciplinary team developed the proposed action to meet the purpose and need of the project and address the issues. The environmental assessment contains analysis of the effects of the proposed action and no action alternatives, and the draft decision notice describes the responsible official's consideration of the alternatives. During the scoping and draft environmental assessment comment periods, commenters provided several management suggestions that could be considered as elements of a full alternative. The interdisciplinary team integrated these suggestions into the proposed action, analyzed them as part of the no action alternative, or provided rationale for not analyzing them in detail. Chapter 2 of the environmental assessment describes each of the alternatives considered but not analyzed in detail. In general, the alternatives not analyzed in detail do not meet the purpose and need for the project. The Forest Service has the discretion to determine the purpose and need for the project, which influences the scope of the analysis, including the range of reasonable alternatives (FSH 1909.15, chapter 10, section 11.21). (Draft DN Appendix B, page 67)

Commentary: The fact that the FEA provides only two alternatives, "do nothing" or "do what is proposed," is problematic and probably illegal. In 1997 the 7th Circuit Court held that "a federal agency failed to examine the full range of reasonable alternatives[hellip]" (Simmons v. US Army Corps of Engineers - 1997, No. 97-1131). Other than the two offered, there are other obvious alternatives. The project should include those to keep from running afoul of NEPA directives.

Suggested Remedy:

The Agency must pull the FEA and provide additional alternatives for this project.

Issue: The Forest Service failed to properly analyze road-related impacts and failed to incorporate its duty to identify the minimum road system.

1. Failure to identify the minimum road system

In our comments we urged the agency to carefully evaluate the Mud Creek Project through the lens of the Travel Management Rule (TMR) under subpart A and incorporate the need to identify and implement a minimum road system. Specifically we explained that "It is arbitrary and capricious for the agency to so narrowly constrain the purpose and need so as to preclude analyzing an alternative that satisfies its duties under the TMR Subpart A."

FOC et al EA comments at 38. The Forest Service acknowledges that it "has the discretion to determine the purpose and need for the project." Draft DN, Appendix B at B-6. As such, the agency made a specific determination not to incorporate TMR subpart A compliance into the project's purpose and need even though it explains that "[t]he forest proposes to implement a suitable transportation system for long-term land management that is responsive to public interests and reduces adverse environmental effects." Updated EA at 38. It appears the Forest Service acknowledges the need to identify the minimum road system (MRS), but then it refuses to comply with the very regulation promulgated to meet that need: "[t]he responsible official is not identifying a minimum road system for the project area. The regulations at 36 CFR 212.5(b) do not require identification of a minimum road system at the project level." Draft DN, Appendix B at B-49. While the cited regulation does not require identification of the MRS, the decision not to include it while also acknowledging the need to implement a suitable transportation system constitutes a glaring contradiction, and reflects the arbitrary nature of the agency's decision not to comply with the TMR under subpart A. The omission becomes even more capricious with the Forest Service explanation that it prepared a project specific Travel Analysis Report that "consisted of an assessment of the benefits of road segments for access for recreation and forest management and the risks of road segments to various resources." Id. The agency provides no explanation for why it would produce a project specific TAR, identify the need to implement a suitable transportation network and then refuse to comply with the TMR under subpart A. The only reasonable conclusion is that the Forest Service does not want to be held to their regulatory requirements.

1. Failure to properly analyze environmental consequences of roads due to improper reliance on Best Management Practices (BMPs) and project design features.

Our comments raised serious concerns regarding the Forest Service over-reliance on BMPs and project design features. FOC et al. EA Comments at 28, 38-39. In response, the agency asserts that "BMPs and hauling-related design features (draft EA, Appendix A, pp. 33-36), in particular graveling of stream crossings and near-stream road segments, are predicted to limit sediment delivery from haul routes

(draft EA, pp. 50-51; AQUATICS-001, Table 13, p. 54; AQUATICS-007, p. 19)." Draft DN Appendix B at B-52. Yet the analysis, in particular sediment production determined through the WEPP model, assumes 100% BMP effectiveness and that those BMPs will be adequately maintained. AQUATICS-007, Table 38 at 19; AQUATICS-024 at 4 (stating "The WEPP:Road model assumes that during and after log hauling, the BMP's would be satisfactorily maintained.). However, the Forest Service failed to demonstrate it can maintain those BMPs in the long term, and in fact, the agency omitted economic analysis from the TAR precluding the ability to demonstrate how it will adequately maintain those roads, including the BMPs. PF-ROAD-004 at 4 ("[t]he Mud Creek travel analysis did not address economic issues in its risk-benefit analysis.").

The analysis also fails to distinguish sedimentation from log hauling along the 100 ft buffer and at stream crossings, instead combining those measures, which precludes the public from understanding sedimentation that occurs at those crossings separate from road-side sedimentation. Ultimately, the Forest Service should have provided a WEPP model output without BMPs in order to understand the full potential rates of sedimentation. This is especially true since the Forest Service acknowledges that "[s]imilar to standard BMPs applied during road location and construction, the design elements do not totally eliminate sediment production and delivery, but they reduce its effects to the extent possible." AQUATICS-007 at 20. In sum, the Forest Service failed to take a hard look at the potential rates of sedimentation from log haul activities due to its over-reliance on BMPs.

The agency's response to comments doubles down on its BMP and design feature reliance:

(Sugden 2018), (Brown et al. 2015), (Efta 2009), and (Montana Department of Environmental Quality 2005) provide some more recent examples of road BMP effectiveness referenced in AQUATICS-001, p. 53. In addition, AQUATICS-005 contains a long list of citations that document the effectiveness of the fisheries design features on the Bitterroot National Forest. AQUATICS-029 and AQUATICS-030 contain the results of the 2018 BMP Field Review for the state of Montana. In the field review, Forest Service projects are not broken out by their particular National Forest, but are lumped under the general category of "Federal."

Draft DN Appendix B at B-52. Looking more closely at the referenced project files, AQUATICS-005 does contain a list of citations, but both the project file and the Final EA fails to disclose their findings or incorporate them into a detailed analysis necessary to satisfy NEPA's hard look requirement. Further, the 2018 Field Review completed by the state of Montana fails to adequately address our comments, and in particular the critique of such state-conducted reviews disclosed in the report we attached to our past comments titled "The Environmental Consequences of Forest Roads and Achieving a Sustainable Road System (March 2020)."

Specifically, when considering how effective BMPs or design features are at controlling nonpoint pollution on roads, both the rate of implementation, and their effectiveness should both be considered. The Forest Service tracks the rate of implementation and the relative effectiveness of BMPs from in-house audits. This information is summarized in the National BMP Monitoring Summary Report with the most recent data being the fiscal years 2013-2014. Carlson et al. 2015. The rating categories for implementation are "fully implemented," "mostly implemented," "marginally implemented," "not implemented," and "no BMPs." "No BMPs" represents a failure to consider BMPs in the planning process. More than a hundred evaluations on roads were conducted in FY2014. Of these evaluations, only about one third of the road BMPs were found to be "fully implemented." Id. at 12.

The monitoring audit also rated the relative effectiveness of the BMP. The rating categories for effectiveness are "effective," "mostly effective," "marginally effective," and "not effective." "Effective" indicates no adverse impacts to water from projects or activities were evident. When treated roads were evaluated for effectiveness, almost half of the road BMPs were scored as either "marginally effective" or "not effective." Id. at 13.

Further, a technical report by the Forest Service entitled, "Effectiveness of Best Management Practices that Have Application to Forest Roads: A Literature Synthesis," summarized research and monitoring on the effectiveness of different BMP treatments for road construction, presence and use. Edwards et al. 2016. The report found that while several studies have concluded that some road BMPs are effective at reducing delivery of sediment to streams, the degree of each treatment has not been rigorously evaluated. Few road BMPs have been evaluated under a variety of conditions, and much more research is needed to determine the site-specific suitability of different BMPs (Edwards et al. 2016, also see Anderson et al. 2011) Edwards et al. (2016) cites several reasons for why BMPs may not be as effective as commonly thought. Most watershed-scale studies are short-term and do not account for variation over time, sediment measurements taken at the mouth of a watershed do not

account for in-channel sediment storage and lag times, and it is impossible to measure the impact of individual BMPs when taken at the watershed scale. When individual BMPs are examined there is rarely broad-scale testing in different geologic, topographic, physiological, and climatic conditions. Further, Edwards et al. (2016) observe, "[t]he similarity of forest road BMPs used in many different states' forestry BMP manuals and handbooks suggests a degree of confidence validation that may not be justified," because they rely on just a single study. Id. at 133. Therefore, ensuring BMP effectiveness would require matching the site conditions found in that single study, a factor land managers rarely consider.

Climate change will further put into question the effectiveness of many road BMPs (Edwards et al. 2016). While the impacts of climate will vary from region to region (Furniss et al. 2010), more extreme weather is expected across the country which will increase the frequency of flooding, soil erosion, stream channel erosion, and variability of streamflow (Furniss et al. 2010). BMPs designed to limit erosion and stream sediment for current weather conditions may not be effective in the future. Edwards et al. (2016) states, "[m]ore-intense events, more frequent events, and longer duration events that accompany climate change may demonstrate that BMPs perform even more poorly in these situations. Research is urgently needed to identify BMP weaknesses under extreme events so that refinements, modifications, and development of BMPs do not lag behind the need." Id. at 136.

Significant uncertainties persist about BMP or design feature effectiveness as a result of climate change, which compound the inconsistencies revealed by BMP evaluations and suggest that the Forest Service cannot simply rely on them to mitigate project-level activities. This is especially relevant for the Mud Creek Project where the Forest Service relies on the use of BMPs or design features instead of fully analyzing potentially harmful environmental consequences from road design, construction, maintenance or use, in studies and/or programmatic and site-specific NEPA analyses. Moreso, as we noted, the Forest Service failed to demonstrate how BMP effectiveness will be maintained in the long term, especially given the lack of adequate road maintenance capacity.

Finally, our concern regarding BMP or design feature implementation and effectiveness is not purely hypothetical or academic given recent history on the Bitterroot National Forest. Specifically, when implementing the Westside Collaborative Vegetation Management Project, the Forest Service explained it would follow specific BMPs, in particular the installation of culverts when natural drainage would be insufficient to protect natural resources:

Locate and design roads and trails to drain naturally by appropriate use of out-sloping or insloping with cross drainage and grade changes, where possible. Relief culverts and roadside ditches will be designed whenever reliance upon natural drainage would not protect the running surface, excavation, or embankment. Road and trail drainage should be channeled to effective buffer areas to maximize sediment deposition prior to entry into live water.

Westside Collaborative Vegetation Management Project Environmental Assessment (EA) - Appendix A - Best Management Practices (PDF 248kb) at A-16. Yet, Friends of the Bitterroot documented inadequate drainage on a newly constructed road authorized under the Westside project decision notice. Figure 9.

In addition, when implementing the Darby Lumber Lands Phase II project the Forest Service violated Montana's Streamside Zone Management along a section of Roan Creek. The rules are in place to ensure compliance with the Clean Water Act, and Montana's Department of Natural Resources and Conservation sent a notice of violation to the Forest Service. The state later withdrew its repair order citing a September 2016 MOU, but the matter of the violation remains, which was raised and documented in several letters to the Forest Service and state of Montana (Attachment E). Further, Friends of the Bitterroot documented other design feature violations including inadequate road drainage and damage, including pooling, rutting, haphazard straw bale placement, and ultimately a road failure. Id. These examples contradict Forest Service claims that its BMPs in the Darby Lumber Lands Phase II project are effective:

Review of application of BMP's recently installed on FR 321, the North Rye Road that was identified for hauling in the Darby Lumber Lands II project found that BMP's have been applied as planned but have not yet been tested by log haul. In an older project, BMP's applied on the Meadow Creek Road, FR 72 5 following the 2000 fires contributed to delisting of Meadow Creek from a sediment impaired stream (PF-AQUATICS-027).

PF-AQUATICS-24 at 4. The project file failed to explain which Meadow Creek BMPs were effective or how much they contributed to resolving the stream impairment. In sum, the Forest Service cannot rely on general, statewide BMP monitoring reports conducted by the state of Montana, or general Forest Plan monitoring reports to show successful BMP implementation and effectiveness rates. Rather, the agency must show how the Bitterroot National Forest ensures its project design criteria and BMPs effectively mitigates harm to natural resources on the forest. The Mud Creek Project analysis fails on all counts.

Suggested Remedy:

Revise the project's purpose and need to incorporate the agency's duty to identify the minimum road system, and demonstrate in an EIS how the selected alternative satisfies the requirements under the subpart A of the TMR. In addition, the agency must provide additional analysis in an EIS that discloses the potential environmental consequences of road-related sedimentation without assuming BMPs and design features will be implemented correctly 100 percent of the time and be 100 percent effective.

ENDANGERED SPECIES

Issue: BNF fails to fully disclose the direct, indirect, and cumulative effects of project activities on aquatics, bull trout recovery, and other sensitive species. Analysis of project activities as they apply to aquatics and fisheries is incomplete.

We addressed this issue in FOB et al 24-29, FOC et al 27-28, and Alliance at 7-8. These concerns have not been addressed and carry over to this objection. We would like to add the following.

FOB et al at 24-25 states, "DEA at 48 states that bull trout are on the decline due to rising stream temperatures.

It states, "If and when streams are burned at high severity, the speed and magnitude of the temperature increases, and the fish community changes are likely to be accelerated and more pronounced." The DEA analyzes the possibility of fire on declining fish populations but fails to analyze project activities on bull trout and other sensitive species."

DDN at 10 states, "There would likely be an adverse impact to Bull Trout and its critical habitat from implementing the project."

FEA continues to promote log hauling over fire disturbance for bull trout even though they should assume high severity fire driven by weather will happen regardless of project activities. We would like to add the following information for our objection refuting the idea that bull trout can adapt better to logging and roads than fire. After the Bitterroot fires of 2000, debris flows immediately after the fire were troublesome but in the long term, the effects were positive. Studies done a decade after the fire showed native fish populations increasing and non-native fish declining especially in areas of high intensity fire as soon as three years after the fire (Clancy et al 2012 presentation). Rieman and Clayton 1997 also offer the following information:

a) Although wildfires may create important changes in watershed processes often considered harmful for fish or fish habitats, the spatial and temporal nature of disturbance is important. Fire and the associated hydrologic effects can be characterized as "pulsed" disturbances (sensu Yount and Niemi 1990) as opposed to the more chronic or "press" effects linked to permanent road networks. Species such as bull trout and redband trout appear to have been well adapted to such pulsed disturbance. The population characteristics that provide for resilience in the face of such events, however, likely depend on large, well-connected, and spatially complex habitats that can be lost through chronic effects of other management. Critical elements to resilience and persistence of many populations for these and similar species will be maintaining and restoring complex habitats across a network of streams and watersheds. Intensive land management could make that a difficult job.

A paper by the Western Montana Level 1 Bull trout Team (Riggers et al 2001) states:

a) Habitat conditions are another factor that has changed significantly. In general, fish habitat quality is much less diverse and complex than historic, and native fish populations are therefore less fit and less resilient to watershed disturbances. Roads, more than any other factor, are responsible for the majority of stream habitat degradation on National Forest Lands in this area (USDA 1997). Historically roads were not present in watersheds and did not affect hydrologic or erosional patterns. Now, however, extensive road networks in many of our watersheds contribute chronic sediment inputs to stream systems and these effects are exacerbated when fires remove the vegetation that filters road runoff.

b) [hellip] the real risk to fisheries is not the direct effects of fire itself, but rather the existing condition of our watersheds, fish communities, and stream networks, and the impacts we impart as a result of fighting fires. There, attempting to reduce fire risk as a way to reduce risks to native fish populations is really subverting the issues. If we are sincere about wanting to reduce risks to fisheries associated with future fires, we ought to be removing barriers, reducing road densities, reducing exotic fish populations, and re-assessing how we fight fires. At the same time, we should recognize the vital role that fires play in stream systems and attempt to get to a point where we can let fire play a more natural role in these ecosystems.

c) Salvage of burned trees is often proposed to reduce future fuel loading. While salvage can be accomplished with minimal impacts in some areas, many burned areas are already extremely sensitive to ground disturbance due to the loss of vegetation. Further disturbance can result in increased erosion, compacted soils and a loss of nutrients from these areas (USDA 2000, Beschta et al. 1995).

d) [hellip]we believe, in most cases, proposed projects that involve large-scale thinning, construction of large fuel breaks, or salvage logging as tools to reduce fuel loadings with the intent of reducing negative effects to

watersheds and the aquatic ecosystem are largely unsubstantiated. Post-fire activities such as these that increase the probability of chronic sediment inputs to aquatic systems pose far greater threats to both salmonid and amphibian populations and aquatic ecosystem integrity than do fires and other natural events that may be associated with undesired forest stand condition (Frissell and Bayles 1996).

Malison and Baxter 2010 found that a decade after the Diamond Peak fire in Idaho, aquatic insects increased due to a pulse of nutrients from intensive fires creating more food for native fish.

We have been unable to find documentation in project files that proper analysis has been done concerning whether riparian management objectives in INFISH are being met. Analysis of FWP redd counts in project area streams are not supplied, nor is MacNeil coring information. There is no mention in the FEA that impaired streams TMDLs are being met or whether culverts are monitored on a regular basis. Or how project activities will affect TMDLs. This is mandatory to take the required hard look to determine the effects of project activities are detrimental to bull trout.

FEA at 42 states, "No specified roads will be constructed within riparian habitat conservation areas in the Lower Blue Joint, Little West Fork, and Nez Perce watersheds. These are bull trout priority watersheds." This does not provide the number of temporary roads proposed in these watersheds. Since temporary roads could be on the landscaped as long as 23 years or more and decommissioning is dependent on funding, it is imperative that these roads are considered in the analysis.

FOC et al at 27 points out that according to project documentation, "The timber sale will extirpate bull trout from portions of current range, violating NFMA and the Endangered Species Act (ESA). The EA fails to demonstrate consistency with Forest Plan direction for fish, riparian areas, and water quality and quantity." DDN at 10 replies, "Under the ESA, the focus on "take" involves the adverse impacts to individuals of the species, not to the species as a whole. If there is "take," the Services will consider the impacts to be significant resulting in a Likely to Adversely Affect determination."

FOC et al at 27 continues, "The EA states, "Rombo Creek is the only stream in the project area where a cumulative effect may occur to bull trout and bull trout habitat. The spawning and rearing habitat in Rombo Creek is already impaired by high sediment[hellip]" The EA admits that under No Action, bull trout [hellip]and habitat in the project area would likely continue on their current trends ([hellip]declining)." In other words, the FS's current management is causing a "take" of bull trout, which means formal consultation with the U.S. Fish & Wildlife Service is required." But DDN at 9 concludes, "The selected alternative will not adversely affect the viability of any threatened, endangered or candidate wildlife, fish, or plant species that may occur in the area. pg 9.

Yet the Aquatics reports state that "As long as the design features are properly followed (and this analysis assumes that they will be), aquatic resources will be sufficiently protected." This is stated even though it is clear in table 13 DDN that BMPs have not been maintained in the area and are the "biggest source of sediment' in the project area impaired streams including critical bull trout habitat.

FOB et al at 22-32 made it clear that the WEPP models were not meant to be used to assess sediment amounts, only to compare alternatives. FEA table 12 and 13 show sediment results if "BMPs are applied and maintained. The same tables show the poor performance of current BMPs in the area. How will road maintenance after the project be different than before the project? DDN and FEA do not discuss a future road maintenance budget and how it will be different than the current one. Project documents do not support the assumption that BMPs will be maintained into the future.

FOB et al 22-32 states, "Yet the DEA merely claims that sediment "possibly from log hauling" (DEA at 52 and 53 and 54) could affect impaired streams and Bull Trout and endangered species. Failing to analyze the effects of log hauling on impaired streams that are habitat to bull trout is a violation of the ESA." FEA and DDN at 10

states, "Although hauling and sediment delivery would temporarily increase with the proposed action which would adversely affect some bull trout and bull trout critical habitat, the extent of these effects is limited." It is only limited if BMPs are maintained into the future. Again, there is no support for this assumption.

FEA at 54 states, "In the Nez Perce Fork and Rombo Creek, hauling may deliver small amounts of sediment into bull trout spawning and rearing habitats that the U.S. Fish and Wildlife Service considers to be in adverse condition (functioning at unacceptable risk) for sediment and substrate embeddedness." Again they counter this harm by stating, "with proper installation and maintenance of BMP's, the amount of sediment that hauling delivers is likely to be too small and scattered to result in measurable effects to bull trout individuals and habitat. Over time, the BMP's should result in gradual improvements in the quality of bull trout spawning and rearing habitat in the Nez Perce Fork and Rombo Creek." Again. where is the guarantee that BMPs will be maintained? And there is no mention of bull trout behavior. Bull trout have a strong fidelity to their spawning stream so after they have gone to a river or lake to grow they will return to that spawning stream, and not another one, to spawn several times over their lifetime. If the Rombo creek population is eradicated there will be no bull trout from another stream to replace it.

FOB et al at 26 and Alliance at 7 comments remind BNF that, "The roads analysis and effects on streams in the DEA do not take into account the constant poaching of closed and administrative roads as well as illegal off-roading that is rampant on BNF." And example is the picture below of an off-road route created to go around a trail closure on Blue Jay Lane. The response in DDN Appendix B at 17 states, "Illegal road use is not part of the proposed action and is thus not analyzed." FEA also claims that temporary roads will be decommissioned 3 years after project activities are completed. Since this is a 20 year project, conceivably "temporary" roads could be on the landscape for 23 years. FEA also states that decommissioning is dependent on funding. FEA does not analyze sediment inputs to steams from decommissioning. Illegal road use and use and decommissioning of temporary roads has not been fully analyzed or included in the information disclosed to USFWS. This is a gross misrepresentation of the effects to bull trout and brings into question the idea the effects to bull trout and other sensitive species will be "minimal."

Illegally created route around the Blue Jay Lane trail closure on BNF

Aquatics reports and FEA fail to analyze the suspension of EHE standards in all 14 watersheds. FEA and supporting analysis state that suspension of EHE standards (this is explained in more detail in the EHE amendment issue) will happen in only six. How will this increase in allowable road densities affect aquatics, bull trout, pearlshell mussels and westslope cutthroat trout?

FEA at 14 states, "For road construction proposals in watersheds (West Fork, Buck, Ditch) with designated sediment impairments (i.e. TMDLs), consultation with the Montana Department of Environmental Quality has been completed." All consultations should happen before ROD.

We were troubled by the statement in DDN Appendix B at 13, "There is no limit on commercially treated acres in the Took Ridge Saddle area. Regeneration treatments can occur in the Took Ridge Saddle area, but not in openings greater than 40 acres." We can find no firm limits on logging in the project area by implementation area or watershed. Table 2 FEA at 13 shows potential maximum treatments per implementation area, but these are only potential. The table states, these are only estimates and final treatment types will happen after field review and well after ROD.

There are equivalent clearcut thresholds listed FEA at 7, but even the ECA thresholds seem meaningless. According to the table, "Vegetation removal would be limited to 20% equivalent clearcut area (ECA) or less in any given watershed in the project area. Research shows that below 20% ECA in the watershed, it is not possible to measure increases in stream flows. Openings greater than 40 acres were considered in the ECA analyses (PF-AQUATICS-009, -025) and would be allowed as long as they do not cause overall watershed ECAs to exceed

20%." However this only "may" reduce logging. FEA at 13 states, "Should response reach thresholds be approached or exceeded, a reduction of commercial harvest in these areas may also be considered as well as exploration of potential restoration opportunities such as in-stream large wood placement/riparian revegetation to facilitate more channel roughness and added bank stability. Design features in addition to the standard range of design features contained in Appendix B may be warranted (emphasis added)." These added design features and restoration opportunities were not analyzed in project documentation and would be subject to NEPA.

The Mud Creek FEA and DDN fail to ensure population viability in violation of NFMA and additionally, violating NEPA's requirements that the FS demonstrate scientific integrity. See 36 C.F.R. 219.3; 40 C.F.R. 1502.24. FOB et al comments at 32, state, "The FS fails to set meaningful thresholds and assumes without scientific basis that project-caused habitat losses will not threaten population viability. Of such analyses, Schultz (2010) concludes that "the lack of management thresholds allows small portions of habitat to be eliminated incrementally without any signal when the loss of habitat might constitute a significant cumulative impact." The cumulative effects of carrying out multiple projects simultaneously across a national forest makes it imperative that population viability be assessed at least at the forest-wide scale (Marcot and Murphy, 1992; also see Ruggiero et al., 1994a)."

RHCA buffers are not a complete safety factor for streams. Mud Creek will allow commercial logging in 19 acres of RHCA buffers and the buffers did not protect fish habitat and streams from the debris flow in Willow Creek pictured where BMPs were not maintained.

Water pooling on the road that failed well above and outside of RHCA buffer.

The FEA fails to assess the cumulative effects from nearby projects Piquett Creek and the proposed Hughes Creek. The incomplete analysis of effects to aquatics, bull trout and other sensitive species is a violation of ESA, NEPA, NFMA, and APA.

Aquatics project documentation implies that fires will be abated or prevented by project activities and even though project activities will adversely affect bull trout, fire will be worse. Currently the climate is warming and the area is experiencing dry conditions. This will continue. Over the centuries, research has demonstrated a direct correlation between warming, drying climate/weather, and large fires. The 1910 Burn that raced across 3-3.5 million acres of Idaho and Montana in two days resulted from drought and high winds. The 1910 Burn occurred long before anyone could assert that fire suppression was effective or that "unnatural fuel build-up" had happened.

The Paradise fire in California burned through heavily logged lands. And the Dixie Fire (figure below) burned through private and public lands that had been thinned presumably to prevent large fires.

Reinhardt et al 2008 concluded that: "Extreme environmental conditions [hellip]overwhelmed most fuel treatment effects. . . This included almost all treatment methods including prescribed burning and thinning. . .. Suppression efforts had little benefit from fuel modifications." An Zald and Dunn 2018 have shown, "Using Random Forest ensemble machine learning, we found daily fire weather was the most important predictor of fire severity, followed by stand age and ownership, followed by topographic features. Estimates of pre-fire forest biomass were not an important predictor of fire severity." And "Our findings suggest intensive plantation forestry characterized by young forests and spatially homogenized fuels, rather than pre-fire biomass, were significant drivers of wildfire severity."

The recent Bootleg fire burned through logged areas as shown by the red in the figure below.

Possible Remedy:

Conditions based analysis is inappropriate because the lack of site-specific analysis results in unknown effects on aquatics, bull trout, pearlshell mussels, and westslope cutthroat trout. Project should be withdrawn and conditions based analysis should be abandoned. Thorough site-specific analysis must be completed to fully disclose and analyze impacts to aquatics, bull trout and sensitive species.

Analyze the direct, indirect and cumulative effects of project activities, illegal ATV travel, and large intense fires combined on bull trout and aquatics in the area.

Issue: The Bitterroot National Forest Unlawfully Failed to Analyze and Mitigate Impacts of the Project on Grizzly Bear Connectivity

The Draft Decision Notice and Finding of No Significant Impact states the following regarding threatened species:

"Proposed vegetation treatments to improve habitat conditions for wildlife are based on an

analysis of the condition of existing habitats and vegetation factors important to threatened

and endangered, sensitive, and management indicator species on the Bitterroot National

Forest." [emphasis added] DDN-FONSI pg 2.

This finding is untrue for grizzly bear. Despite significant scientific evidence of the importance of the project area for grizzly bear connectivity, the Draft EA and Response to Comments make it clear that no analysis was done for grizzly bear connectivity value of the Mud Creek Project area, nor were any mitigating standards put in place to ensure connectivity for grizzly bear.

"The Forest submitted the action area, which contained the two grizzly bear analysis units that intersect the project and total over 206,000 acres. The US Fish and Wildlife Service is responsible for designating areas where threatened and endangered species "may be present" and designating critical habitat. Grizzly bears were not determined to be present and no critical habitat exists for grizzly bears. The Biological Assessment for Canada Lynx (PF-WILD-017, p. ii) states that revision of the biological assessment is required if "a new species is listed or habitat identified, which may be affected by the action." If grizzly bears are determined to be present during project implementation, the Forest will re-consult on effects to grizzly bear." Appendix B Response to Comments pg 40

"Some threatened, endangered or RFSS species were not analyzed in further detail because (1) either the species or their preferred habitat is not known to occur in the project or analysis area; (2) activities in the proposed alternative would have no effect on a species or suitable habitat; and/or (3) appl;icable design features (Appendix A) would either eliminate or minimize impacts to such a degree that they would be undetectable or unmeasurable. The rationale for elimination from detailed analysis for grizzly bear[hellip] is listed in the wildlife specialist report and briefly explained below (Table 1 in Appendix A of PF-WILD-001." FINAL EA PG 97

"Grizzly bear was not carried forward for detailed analysis because it has not been designated by the U.S. Fish and Wildlife Service as "may be present" in the project area, and the. Bear has not been documented in any of the Grizzly Bear Analysis Units that intersect the project area." FINAL EA PG 98

Thus the Final EA, Specialist Report and Decision Notice-FONSI all rely on the determination of the USFWS that the grizzly bear is not present in the project area.

Nor does the Final EA or any Specialist Report address grizzly bear connectivity, despite the claim in Appendix

B Response to Comments that connectivity needs were assessed.

"The wildlife section of the draft EA and the Wildlife Effects Analysis Report (PF-WILD-001) evaluated the impacts of proposed actions on wildlife species and their habitats, including habitat linkages/connectivity, and corridors." Appendix B Response to Comments Pg 37

Thus the response to comments is substantively unresponsive to Montana Chapter of Sierra Club's request that an analysis of the effects of the proposed action on grizzly bear connectivity and its suggested design features to protect those values, despite scientific studies that have documented that much of the project area could serve as a connection between the Greater Yellowstone Recovery Area and the Northern Continental Divide Ecosystem (Peck et al 2017). Indeed, mapping of the project area versus the Peck et al (2017) model output shows that the eastern part of the project area in particular is an area with substantial potential for connecting the Bitterroot Ecosystem Recovery Area with the GYE. Figure 1 below shows the map we provided in our comments at the Draft EA stage requesting connectivity analysis and Figure 2 is an updated map illustrating the Mud Creek Project area in relation to the modeled male grizzly dispersal routes in more detail.

In the words of the researchers: "[t]herefore, with the exception of areas with low numbers of predicted passages (e.g., wide open valleys), we anticipate that sporadic bear sightings and possible interactions with humans may occur almost anywhere along the gradient of our model predictions." (Peck et al 2017 at 14). The Grizzly Bear Recovery Plan has several relevant provisions. First it found "the Bitterroot Evaluation Area contains sufficient amounts of quality habitat to warrant grizzly bear recovery[hellip]. The IGBC approved the Bitterroot evaluation area for grizzly bear recovery efforts." Grizzly Bear Recovery Plan (GBRP) (1993 at 12). Secondly, the goals of the Grizzly Bear Recovery Plan include: "(4)identify management measures needed to remove population and habitat limiting factors so that populations will increase and sustain themselves at levels identified as the recovery goals. (5) Establish recovered populations in each of the ecosystems where habitat is available to sustain a grizzly bear population." (GBRP at 15). The Bitterroot Ecosystem is one of those ecosystems governed by these provisions under the plan. The Grizzly Bear Recovery Plan also notes "Ideally, preserving linkage between populations is a more legitimate long-term conservation strategy than are attempts to manage separate island populations" , "[l]inkage zones enhance the viability of populations that are separated by some distance" and "one factor that may affect the sustainability of grizzly bear populations in the future is the ability of individual animals to move between ecosystems"(GBRP 1993 at 24) . Thus, the best available science indicates that the project area is a viable connectivity zone for recolonization of the Bitterroot Ecosystem recovery area deserving of conservation as desired by the grizzly bear recovery plan and required by Section 7 of the ESA and the USFS 2012 Forest Planning Rule.

Yet, the Bitterroot National Forest has chosen to rely on the USFWS determination of "not present" despite the best science that indicates that the project area is very much implicated in future connectivity between the GYE and NCDE populations of grizzly bears, let alone the establishment of a Bitterroot Ecosystem recovery area population of the bear. Clearly, the USFWS is mistaken and has failed to fulfill its duties under the Endangered Species Act (ESA) that require it to use the best available science.

While the BNF continues to deflect grizzly bear evaluation to the USFWS, it has an independent duty under Section 7 of the ESA, Section 219.8(a)(1), Section 219.9(b)(1) and Section 219.9(b)(2)(ii) of the 2012 Forest Planning Rules (36 CFR Part 219) and the National Environmental Policy Act. Moreover, the USFS is required to use the best available science in its analysis and planning (36 CFR 219.3). Requirements of the planning rule extend to the project level (Forest Watch v.USFS, 410 F.3d 115 (2d Cir 2005); Ecology Center v. USFS, 451 F.3d 1183 (10th Cir. 2006); Utah Environmental Congress v. Richmond, 483 F.3d 1127 (10th Cir. 2007)). This should especially be true for large project areas in forests that have yet to revise the first forest plan. The current BNF Forest Plan was developed over 30 years ago and therefore the most current planning regulations should

guide BNF project development and analysis. Section 7 of the Endangered Species Act imposes a duty to conserve listed threatened species like grizzly bears beyond mere consultation (Sierra Club v. Glickman, 156 F3d 606 (5th Cir 1998)). Omission of any attempt to analyze and mitigate the effects of the Mud Creek project on grizzly connectivity is therefore a breach of legal responsibilities of the USFS. The National Environmental Policy Act (NEPA) requires analysis of environmental consequences of Forest Service projects like Mud Creek (42 USC 43332 (1)(C)) and 40 CFR 1502.16). Failure to analyze effects of the project on grizzly bear connectivity in the short and long term is therefore a violation of NEPA.

Recent studies authored by Interagency Grizzly Bear Study Team scientists indicate that the project area can function as a linkage area with the Greater Yellowstone Ecosystem. The Peck et al[1] study shows that a significant portion of the project area is habitat that serves as a connectivity area (Figure 1).Connectivity is an essential element of both survival and recovery of ESA listed species and specific, appropriate project requirements that are clear and affirmative boundaries are needed to achieve the duty imposed by Section 7 of the ESA. Thus, connectivity for grizzly bear must be analyzed, explained, maintained and supported by the best available science (36 CFR [sect]219.3 and [sect]219.4).

Under the NEPA Rule found at 40 CFR 1502.16 the following must be analyzed:

(1) The environmental impacts of the proposed action and reasonable alternatives to the proposed action and the significance of those impacts. The comparison of the proposed action and reasonable alternatives shall be based on this discussion of the impacts.

(2) Any adverse environmental effects that cannot be avoided should the proposal be implemented.

(3) The relationship between short term uses of man's environment and the maintenance and enhancement of long term productivity.

(4) Any irreversible or irretrievable commitments of resources that would be involved in the proposal should it be implemented.

(5) Possible conflicts between the proposed action and the objectives of Federal, regional, State, Tribal, and local land use plans, policies and controls for the area concerned. ([sect] 1506.2(d) of this chapter)[hellip]

(7) Natural or depletable resource requirements and conservation potential of various alternatives and mitigation measures.[hellip]

(9) Means to mitigate adverse environmental impacts (if not fully covered under [sect] 1502.14(e))

Clearly, the Final EA/FONSI fails to meet the requirements of several applicable statutes and rules. With respect to NEPA, the adverse consequences of the project activities, the short and long term effects of this 20 year long project, the conflict with the Grizzly Bear Recovery Plan and the resource requirements for grizzly conservation were not considered at all in project analysis or development of treatment prescriptions. New roads are planned, recreation altered, significant areas of commercial timber harvest and reduction of cover through non-commercial treatments, including potential effects on grizzly foods of prescribed fire were among the mandates of Section 1502.16 that remain unaddressed. In addition, no mitigation of impacts on grizzly connectivity is discussed. Thus, the NEPA analysis performed for the Mud Creek project fails to meet legal requirements and must be amended to include such analysis.

Specifically, the Grizzly Bear Recovery Plan (GBRP) found that the Bitterroot Ecosystem was properly a recovery area and that linkages through and to the area were an important part of recovery. The GBRP found: "the Bitterroot evaluation area contains sufficient amounts of quality habitat to warrant grizzly bear recovery

(Servheen et al 1991)....[T]he IGBC approved the Bitterroot Evaluation Area for recovery efforts." (GBRP at 12). The GBRP goes on to find "One factor that may affect the sustainability of grizzlfy bear populations in the future is the ability of individual animals to move between ecosystems." (GBRP at 24). It also found: "Future land management activities within these areas may be critical to maintaining their utility as linkage zones" (GBRP at 26). NEPA, NFMA and the 2012 Planning Rules all mandate, therefore, that the potential conflict with the GBRP be examined carefully during project planning and that mitigating standards at minimum are in place prior to project implementation, if not complete avoidance of linkage impacts. Deferring such analysis and mitigation/avoidance to the discovery of grizzly bear presence fails to meet these legal requirements.

iThe requirements of 40 CFR 1502.16 are also breached by the irretrievable commitment of resources without analysis and the failure to address possible conflicts with the Grizzly Bear Recovery Plan. If presence of threatened species is required to provide for connectivity, many irretrievable commitments of resources may be made that will impede or eliminate connectivity value of the landscape. Essentially, the excuse of "not present" may lead to "never present" and the loss of key linkage areas without thought for the consequences. The courts have made clear that proceeding to make irretrievable commitment of resources, like substantial changes to vegetation structure, without analysis is a violation of NEPA (Native Ecosystems Council v. Dombeck, 304 F.3d 886 (9th Cir 2002)). The language of Section 1502.16 makes it clear that such requirements remain in place. Similarly, the FEA-FONSI of the Mud Creek Project violates the goals of the GBRP spelled out above by 1) potentially limiting linkage that might recolonize the Bitterroot Ecosystem with grizzly bears and 2) blocking linkage to the NCDE, a primary factor in consideration of removal of Endangered Species protections for the GYE grizzly population (Crow Indian Tribe v. United States, 965 F. 3d 662 (9th Cir 2020) and Crow Indian Tribe v. United States, 343 F. Supp. 999 (DC MT 2018))

Suggested Remedy

In order to properly protect grizzly bear connectivity value of the project area and mitigate the potential impact on grizzlies colonizing the Bitterroot recovery area or that move outside its borders the following must be included as project requirements:

[middot]No increase and reductions of open road density. Avoiding new roads and immediate removal and restoration of temporary roads recommended for grizzly habitat effectiveness and security.

[middot]The effects of new trails or changes in trail use and the potential for increasing human encounters should guide trail locations/management provisions.

[middot]The effects of vegetation management, including commercial, non-commercial and prescribed fire on grizzly bear use, movement and habitat security should be mitigated through cover requirements, protection of food sources and limitation of human developments.

[middot]Limitations on re-entry (10 years recommended) following management activities.

Revision of the Biological Assessment/FONSI and re-initiation of consultation with USFWS based on the above information, a finding of significant effects under NEPA, preparation of an Environmental Impact Statement and inclusion of grizzly habitat mitigations suggested above are required under applicable law.

Issue: BNF fails to disclose or analyze the direct, indirect, and cumulative effects of project activities to Lynx recovery and Lynx critical habitat. BNF fails to use the best available science to analyze effects.

FOB et al comments at 10 states, "The Draft EA contains inadequate analysis of project effects on animal species, including cutthroat trout, bull trout, grizzly bear, lynx, Northern Rockies fisher, black bear, multiple migratory bird species, cavity-nesting birds (snag habitat), bats, raptors, red squirrels, wolverine and other small

mammals, etc. Also missing is an inventory of key wildlife habitat, a violation of NEPA."

And at 32-34, we expressed concern that no analysis of historic range of Lynx habitat components with present conditions has been completed, that the best available science has not been used to analyze effects to lynx, that project activities will result in unauthorized take, that snowshoe hares (lynx prey) will be adversely affected by the removal and burning of dense areas of small shrubs and trees, the removal of thermal and hiding cover standards. We expressed concern for the effect of large openings and uneven age management on lynx movement, effects of project activities on female lynx and reproduction, and that effects on connectivity from project-created or cumulative openings were not analyzed in terms of this smaller landscape scale. And connectivity between project area LAUs and adjacent LAUs was not analyzed or disclosed. And that no analysis was done on snowmobile travel in the area and its effects on lynx as well as a possible increase in snowmobile activity due to thinned trees and large openings.

At 32 we state, "the distribution and range of lynx is nearly coincident with that of snowshoe hares, and protection of snowshoe hares and their habitat is critical in lynx conservation strategies."

And, "the FS continues failure to consider, apply, and incorporate best available science; fails to demonstrate consistency with all Forest Plan/NRLMD direction, and will adversely modify lynx critical habitat in violation of the Endangered Species Act (ESA). The project will result in unauthorized take as defined by Section 9 of the ESA."

At 33, we state: Please analyze how large openings and uneven aged management will affect lynx travel and travel habitat throughout the year and especially during winter and early spring. Existing openings such as clearcuts not yet recovered are likely to be avoided by lynx in the winter. (Squires et al. 2010; Squires et al. 2006a) Squires et al. 2010 show that the average width of openings crossed by lynx in the winter was 383 feet, while the maximum width of crossed openings was 1240 feet. to avoid sparse, open forests and forest stands dominated by small-diameter trees during the winter."

And "Holbrook, et al., 2018 "used univariate analyses and hurdle regression models to evaluate the spatio-temporal factors influencing lynx use of treatments." Their analyses "indicated [hellip]there was a consistent cost in that lynx use was low up to [sim]10 years after all silvicultural actions." (Emphasis added.) Please explain how EA conclusions align with this research."

And, "Squires et al. (2013) noted that long-term population recovery of lynx, as well as other species as the grizzly bear, require maintenance of short and long-distance connectivity. The importance of maintaining lynx linkage zones for landscape connectivity should be maintained to allow for movement and dispersal of lynx. Lynx avoid forest openings at small scales, however effects on connectivity from project-created or cumulative openings were not analyzed in terms of this smaller landscape scale. And connectivity between project area LAUs and adjacent LAUs was not analyzed or disclosed.

DDN at 10 admits, "Three species listed under the Endangered Species Act, lynx whitebark pine, and Bull trout, would be affected by the proposal. There would likely be an adverse impact to Bull Trout and its critical habitat from implementing the project."

We would like to add:

Three lynx analysis units (LAUs) have 30% or more of their habitat in the "early stand initiation" stage, so under the Northern Rockies Lynx Amendment and the forest plan, no more habitat can be converted to this stage. This means no clearcutting or other even-aged regeneration treatment in these LAUs. Non-commercial treatment, such as thinning in mature, multi-story stands, could also degrade lynx habitat. Some treatment is proposed in the project area in the three LAUs with at least 30% in the early stand initiation stage, "in these three LAUs, some vegetation treatments may be restricted pending field verification from the Forest wildlife biologist, depending on

assessed on-the-ground condition of stands prior to treatment in accordance with the implementation process[hellip]". BA at 9. This will be delayed until implementation which does not allow the public proper information to provide meaningful comment. Nor does it fully disclose conditions in the BA in violation of NEPA.

The Biological Assessment for Canada lynx documents the importance of peripheral areas as:

Peripheral populations may contain valuable genetic, physiological or behavioral adaptations that are unique to their ecological success. Because suitable habitats in areas where populations act as metapopulations are spatially separated, the persistence of a metapopulation is dependent on the efficiency and success of dispersing animals in reaching isolated patches of suitable habitat. When patches are fragmented and connections between patches do not exist, recolonization becomes problematic and the metapopulation may be unable to persist, even though patches of suitable habitat remain (Meffe and Carroll 1997). Additional fragmentation and isolation of suitable habitat occurring as a result of land management activities can not only affect small isolated habitat patches supporting smaller populations but also large contiguous patches supporting higher population levels. (USDA Forest Service 1999. Biological Assessment of the Effects of National Forest Land and Resource Management Plans and Bureau of Land Management Land Use Plans on Canada Lynx. 149p.)

USDA Forest Service 1999. The historical lynx habitat map (Figure 6) shows that the Bitterroot National Forest area has housed lynx in the past and the referenced link of currently occupied and unoccupied habitat shows the project area borders areas of current occupation. (https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5193020.pdf) There are core and peripheral or linkage areas. Ruggierio et al 1999 also discuss the effects of fragmentation on competition with lynx by other carnivores and the loss of connectivity. The linkage areas and peripheral areas of lynx habitat will be affected by the project.

The importance of stepping stone areas to species in a changing climate is demonstrated in Saura et al 2014:

Synthesis and applications. Previous static connectivity models seriously underestimate the importance of stepping-stone patches in sustaining rare but crucial dispersal events. We provide a conceptually broader model that shows that stepping stones (i) must be of sufficient size to be of conservation value, (ii) are particularly crucial for the spread of species (either native or invasive or genotypes over long distances and (iii) can effectively reduce the isolation of the largest habitat blocks in reserves, therefore largely contributing to species persistence across wide spatial and temporal scales.

As shown in the Western Wildway Map (Figure 7), the project area is a part of the Continental Corridor connecting Mexico to Alaska, and the regions of that corridor being addressed by scientists and advocates of connectivity for wildlife. This represents a conservation biology approach to landscape conservation which emphasizes linkage zones and connectivity for Canada lynx and other species. The paucity of analysis of the Mud Creek Project with conditions based analysis, in addition to inadequate analysis on most if not all other projects on the BNF, seem to abandon conservation biology principles and connectivity linkage zones. It is hard to discern if project activities will occur in or near designated lynx habitat, the project will most certainly affect important peripheral and connectivity areas.

A "hard look" must be conducted of habitat fragmentation, corridor functionality, vegetation treatments, road density, snowmobile, and motorized activity, trapping and other human activity as well as livestock grazing on Canada lynx. The project must also take into account new trapping laws in Montana, with extended seasons and the incorporation of wolf snaring, and what they will mean for lynx. That look must also include all Forest Plan requirements and intent as well as embody the best available science applicable to Canada lynx. Absent such analysis, it is arbitrary and a violation of NEPA for the Forest Service to claim no extraordinary circumstances exist regarding Canada lynx recovery.

Suggested Remedy:

Delay project decision until site-specific analysis can be conducted on the effects of project activities on lynx habitat, snowshoe hare habitat, and peripheral areas.

Issue: BNF fails to survey for whitebark pine, and fails to analyze and fully disclose the effects of project activities on Whitebark pine.

FOB commented on whitebark pine on p. 10 and p. 34:

p. 10: The DEA evaluation of prescribed fire and logging on whitebark pine within the project area is inadequate and does not provide adequate analysis of existing research. Whitebark pine is highly sensitive to fire, due to thin bark. The draft EA does not define why prescribed burning will be used to kill an undisclosed number of whitebark pine trees, including cone producing trees nor does it disclose when new trees will begin producing a significant amount of pine nuts and how the delay will affect wildlife in the area.

p. 34: Logging stands with whitebark pine in them, besides directly killing a species proposed for listing under the Endangered Species Act (ESA), is a direct adverse impact on grizzly bears. This direct adverse impact needs to be identified in a biological assessment and biological opinion on project impacts to the grizzly bear.

FS RESPONSE

FS responded in DDN p. B-61: "The biological assessment for whitebark pine will disclose in greater detail the effects on the species from the proposed treatments in the project. Cone bearing trees will be protected from any activities proposed."

The Biological Assessment for Whitebark Pine (BA) is new information. It states (BA, p. 14):

"A very small portion of the project area has been surveyed[hellip].The surveys that were conducted in 2019 and 2020 confirmed the presence of whitebark pine in the project area. Whitebark pine habitat is scattered throughout the project area. Within the project area, whitebark pine occurs in higher elevations at 5,636 feet and above. As of May 2021, whitebark pine has been identified in the northern portion of the project, the southeastern portion of the project, the central part of the project, and the majority of whitebark pine trees found in the west central. Varying age classes have been found so far. Cone-bearing trees have been located in the central and west central populations. As of May2021 over a thousand trees have been found within the project area. Surveys are still needed throughout the project area. In 2021 surveys will only be conducted in the north and a small amount in the central portions of the project area, since these areas are scheduled to be implemented first. Blister rust was documented in some populations. Healthy trees were also noted."

How will cone-bearing trees be protected from any activities proposed when the area has not been adequately surveyed and areas of cone-bearing trees are largely unknown?

The BA, p. 12, also states: "If whitebark pine is found in any treatment units, trees 3" diameter at breast height or greater, would be avoided to the extent possible. All healthy and reproducing populations (cone-bearing or mature trees) of whitebark pine are to be avoided during vegetation management activities; unless it is to specifically benefit the species and discussed with a Forest Service Botanist. Mature cone bearing and trees showing rust resistance should be preserved. Whitebark pine (Pinus albicaulis) will be maintained and/or promoted in all stands where it occurs. Damage to existing whitebark pine individuals will be minimized to the extent possible."

"Avoided to the extent possible" and "damage minimized to the extent possible" is not reassuring considering

Whitebark is proposed to be listed as a threatened species under the ESA. The ESA will not exempt the destruction of seedlings nor of non-healthy and non-reproducing populations. The ESA requires that you fully analyze the effects of your activities on Whitebark Pines. You have not even done inventories and field surveys, and you have not disclosed where activities will be implemented. In summary, you do not know where Whitebarks exist, and you do not know where you will implement activities, and therefore no analysis has been done. This is a violation of NEPA and the ESA. This is a project with a 20-year lifespan. While critical Whitebark habitat has not yet been identified by the USFWS, it likely will be before project completion.

How do you propose to "promote Whitebark in all stands where it occurs"? Robert Keane, noted expert on Whitebark Pine stated (2021) that pro-active silvicultural work is unnecessary, and "to let wildfire do the work". He also added that mycorrhizal fungi are important to seedling survival. Mycorrhizal fungi are often negatively impacted by silvicultural activities. Six et al. (2021) suggested "Where silvicultural practices are applied, they should be implemented with caution[hellip][hellip]Anthropogenic change is creating or enhancing a number of stressors on forests. To aid forests in adapting to these stressors, we need to move beyond traditional spacing and age class prescriptions and take into account the genetic variability within and among populations and the impact our actions may have on adaptive potential and forest trajectories." Pfister et al. (1977) noted that Whitebark pine habitat types are very low in productivity, and recommended that they be left alone. You provide no evidence that Whitebark daylighting or prescribed burning are effective tools in promoting Whitebark survival, and, in fact, they may be deleterious.

The activities implemented in Whitebark habitat could be severe. The BA, p. 10, states:

"Since the Mud Creek Project is a condition-based project, there are several activities or treatments that could occur across the project area. Since whitebark pine has been found throughout the project area so far, and there is high potential for more populations to be found, any of the following proposed activities or treatments could occur in whitebark pine populations: Clearcut, Seed tree and shelterwood cut, salvage sanitation cut, Group Selection and Single Tree Selection Harvest, Improvement Cut and Commercial Thin, Stand Improvement-Thinning and Slashing, Log Transport, Tree PlantingAspen Restoration Whitebark Pine Daylighting, Biological Weed Control, Herbicide Weed Control, Meadow Restoration, Native Plant Re-vegetation, Prescribed Burning-Low Intensity, Prescribed Fire- Mixed Severity, Prescribed Burning- Site Prep, Prescribed Fire- Maintenance Burning

Prescribed Fire- Pile Burning, Fuel Break Construction (Hand or Machine), Fireline Construction (Hand or Machine), Piling (Hand or Machine), Mastication, Specified Road Construction, Temporary Road Construction, Road Maintenance and Reconditioning, Road Decommissioning, Road Storage,Trail Construction, Dispersed Camp Site Rehabilitation, Sub Soiling, and Chipping.

Are you saying that you know that not one of these impactful activities will have any detrimental impact on Whitebark Pines? On what basis? How would you know when neither the locations of Whitebarks nor your proposed activities are known? This amounts to no analysis at all.

In the BA, p. 15-16, you speculate on some of the project's effects: "Although the proposed treatments pose the risk of adverse indirect effects, treatments would also indirectly benefit some rare plants. Habitat suitability may be improved if openings allow whitebark pine individuals to thrive and seedlings to establish. Population stability will likely be reduced in the short term (from the loss of individuals) and increase in the long-term as individuals reach maturity and reproduce. Within commercial treatment units, trampling and removal of whitebark pine seedlings and saplings could occur as equipment and machinery remove desired trees. Whitebark pine individuals 3-inch diameter at breast height and greater would be avoided to the extent possible (see design features listed above). Throughout the project area, where whitebark pine has currently been found, whitebark pine is outcompeted by shade tolerant species. Even with treatments occurring and habitats being opened, other shade tolerant species would likely outcompete whitebark pine at these elevations, resulting in no measurable

change to habitat suitability. Within commercial units, whitebark pine would experience some reduction of seedling and saplings to thrive."

As with all conclusions in conditions-based analysis, these are pure speculation. To meet NEPA and ESA requirements, thorough site-specific analysis is required.

The BA, p. 16, also states: "Where whitebark is present for all other proposed activities and treatments, incidental removal or damage may occur. Because of the low abundance of whitebark pine and poor habitat suitability within these units, treatments are not anticipated to have a measurable effect on habitat suitability and population stability. Considering the current state of whitebark pine across its range, the proposed activities would not increase any of the primary stressors of whitebark pine: white pine blister rust, mountain pine beetle, altered fire regimes, or the effects of climate change; but would rather decrease the likelihood of another landscape level mountain pine beetle epidemic and reduce the potential for catastrophic fire by introducing greater heterogeneity to the landscape."

Your logic goes something like this: because Whitebarks are rare in some units, if you kill them, it won't be that many. And there is no evidence in the scientific literature that your activities will decrease the likelihood of another MPB epidemic, and in fact, some studies (e.g. Six et al, 2014, 2018, 2021; Kichas et al, 2020) found that the opposite might be true. The Whitebark summary on the Federal Register (2020) states "we do not know at what scale the impacts of fire exclusion and resultant forest succession have affected whitebark pine", so there may not even be benefits to reducing catastrophic fire. Keane (2021) did not advocate for doing so.

BA, p. 17, states: "There are no "plus" trees in the vicinity of this project. These trees would not be affected by the proposed treatments."

How do you know when field surveys are incomplete? On p. 14 (BA) you say "healthy trees were also noted" when discussing blister rust. Do you mean rust-resistant "plus" trees? These populations would be especially important to identify and protect (Keane, 2021).

The Federal Register Whitebark summary (2020) stated: "the rate of decline appeared to be most sensitive to the rate of white pine blister rust spread, the presence of genetically resistant individuals (whether natural or due to conservation efforts), and the level of regeneration."

While the Mud Creek project treatments may not increase blister rust spread, they could affect whitebark genetics and the level of regeneration. It will not be known until a thorough analysis of the project is done, following NEPA and ESA guidelines.

Suggested Remedy:

Follow NEPA and the ESA by abandoning the conditions-based approach. Do thorough site-specific analysis of the project's effects on Whitebark Pine, identifying locations for specific activities and analyzing effects for each location.

Issue: BNF fails to fully disclose the direct, indirect, and cumulative effects of project activities, and amendments on wolverine (proposed status is under litigation).

FOB et al at 35 expressed concern for Wolverine, still under litigation proposed species for listing under the Endangered Species Act (ESA). "Please analyze the effects of project actions on this species including the targeting of Doug Firs and Lodgepole pines in the proposed treatment cards. Wolverine habitat has contracted in

the US. How will this project, its site specific amendments, and its exceedingly large amendments affect wolverine and the decline in suitable habitat. Please analyze the effects of roads including temporary roads for their time on the landscape while awaiting funding for obliteration and on Wolverine. How will the project change access for trappers and recreationists in the project area also considering increased trapping seasons on wolverine? Please provide information on the quantity and quality of habitat necessary for wolverine as well as the cumulative effects of recreational activity on wolverine.

Please use the best available science to explain how the high density of roads in the area and increasing those roads during project implementation of 20 years will affect all Endangered, Sensitive species and management indicator species"

FEA at 100 claims to have analyzed Wolverine for "Change in the amount and quality of species-specific habitat in the area" and "Likelihood and extent of disturbance to individual species due to project-related activities disturbance." But project documentation fails to identify current viable habitat in the project area as we requested.

We would like to add pertinent research on Wolverine:

Copeland et at. studied the relationship between wolverine and spring snow coverage.

We propose a fundamental geographic distribution for the wolverine (Gulo gulo (L., 1758)) based on the hypothesis that the occurrence of wolverines is constrained by their obligate association with persistent spring snow cover for successful reproductive denning and by an upper limit of thermoneutrality.

All 562 reproductive dens from Fennoscandia and North America occurred at sites with persistent spring snow cover. Ninety-five percent of summer and 86% of winter telemetry locations were concordant with spring snow coverage.

Reductions in spring snow cover associated with climatic warming will likely reduce the extent of wolverine habitat, with an associated loss of connectivity. (Copeland 2010)

McKelvey et al. researched wolverine dispersal patterns in relationship to global warming.

Areas that retain snow cover throughout the 21st century are British Columbia, north-central Washington, northwestern Montana, and the Greater Yellowstone Area. By the late 21st century, dispersal modeling indicates that habitat isolation at or above levels associated with genetic isolation of wolverine populations becomes widespread. Overall, we expect wolverine habitat to persist throughout the species range at least for the first half of the 21st century, but populations will likely become smaller and more isolated.

We expect that the geographic extent and connectivity of suitable wolverine habitat in western North America will decline with continued global warming.

[hellip] conservation efforts should focus on maintaining wolverine populations in the largest remaining areas of contiguous habitat and, to the extent possible, facilitating connectivity among habitat patches. (McKelvey 2011)

Rather than do everything possible to conserve suitable habitat for wolverine (including the retention of canopy cover to the slow spring melt), with this proposed project, the FS's management activities will certainly reduce or remove habitat that the wolverine who currently live in the project's area depend upon.

Recently, a US District Court ruling remanded the USFWS withdrawal of its Proposed Rule to list the distinct population segment of the North American wolverine occurring in the contiguous United States as a threatened species under the Endangered Species Act for further consideration. The ruling reviewed the science relating to

the selection of denning sites in combination with snow presence during the natal period and recent analyses of potential climate change effects to snow pack that indicate a severe reduction in snow cover during this century with negative implications to wolverine populations. This factor alone should place greater emphasis on habitat integrity and restoration for corridors, connectivity for both lynx and wolverine.

The ruling also emphasized that populations in the US, which exist as meta-populations "require some level of regular or intermittent migration and gene flow among subpopulations, in which individual subpopulations support one-another by providing genetic and demographic enrichment through mutual exchange of individuals." If connectivity is lost, "an entire meta-population may be jeopardized due to subpopulations becoming unable to persist in the face of inbreeding or demographic and environmental stochasticity."

The study by Copeland, 2010 cited in the ruling, analyzed spring snow cover to determine overlap with known den sites, finding 97.9% overlap. They concluded that if reductions in snow cover continue to occur, "habitat conditions for the wolverine along the southern extent of its circumboreal range will likely be diminished through reductions in the size of habitat patches and an associated loss of connectivity, leading to a reduction of occupied habitat in a significant portion of the species range." A second analysis by McKelvey, 2011 used Global Climate Models to predict the change in distribution of persistent spring snow cover so that "for conservation planning, predicting the future extent and distribution of persistent spring snow cover can help identify likely areas of range loss and persistence, and resulting patterns of connectivity." McKelvey concluded that they expect, "the geographic extent and connective(ity) of suitable wolverine habitat in western North America to decline with continued global warming" and that "conservation efforts should focus on maintaining wolverine populations in the largest remaining areas of contiguous habitat and, to the extent possible, facilitating connectivity among habitat patches."

In its Proposed Rule, the USFWS accepted these studies as the best available science with climate change as the driving factor. Other threats were considered of lower priority in comparison, "however, cumulatively they could become significant when working in concert with climate change if they further suppress an already stressed population." The USFWS noted harvest, demographic stochasticity and loss of genetic diversity as these secondary factors but avoided mention of habitat integrity and fragmentation by roads, infrastructure and human activity or loss of prey base due to depletion of herbaceous plant communities and cover by livestock grazing.

Robert Inman, PhD, a biologist and Director of the Greater Yellowstone Wolverine Program at the Hornocker Institute/Wildlife Society noted that the FWS singled out a particular activity, fur trapping, that can cause mortality, while ignoring the full range of human activities such as road kill, before records were kept. So delineating habitat based on these records can understate actual range for wolverines. He also provides evidence that wolverines can den in areas lacking the presumed snow cover and that conditions suitable for competing for food are also a limiting factor. He further argues that road density was found to be a factor in an earlier telemetry-based habitat analysis, particularly at higher elevations. Inman et al. 2013.

He also pointed out the extensive trapping that occurred in the US prior to records of wolverine and that they may well have been eliminated from suitable places before records were kept.

So, while the USFWS emphasizes the role of connectivity and genetic exchange in maintaining meta-populations and genetic diversity, it avoids the identification of the connections vital to maintenance and recovery of species. The map of the FWS modeled wolverine habitat (Figure 8) shows wolverine habitat areas in Montana, Idaho, Utah and Wyoming but provides no indication of travel corridors that wolverine might use to connect these.

Suggested Remedy:

Delay project decision until a thorough site-specific analysis of effects of project activities and amendments on

wolverine.

Issue: Project documentation and design features are contradictory as applied to flammulated owls and fail to comply with the Migratory Bird Protection Act.

In comments on the draft EA, FOB and others expressed concern about Flammulated Owls, a Species of Concern in MT and a Sensitive Species for USFS and BLM, that may be nesting in the project area. The Revised Wildlife Effects Analysis Report for the Mud Creek project indicates that Flammulated Owl habitat is "abundant and widely-distributed in the analysis area," so concern about the impacts of the project on this habitat is warranted (17). Surveys for these owls had not been done in the project area for well over a decade. The results of any new surveys conducted this spring and/or summer would have been helpful to the public and interested groups as they read and reacted to the Forest's plans in the Final EA.

In response to comments on the draft EA, the Forest says that Design Features, Appendix A, of the draft EA "inadvertently excluded protecting flammulated owl nest trees. Design Features have been included in the Final EA (Appendix A) to include flammulated owl nest protection buffers of 200 feet around any identified nest trees, and the updated Wildlife Effects Analysis report incorporated discussion and analyses based on the literature recommended (Linkhart and Reynold 1997)" (Draft Decision. Appendix B, p.41).

While it is crucial to have buffers around Flammulated Owl nest trees, those buffers need to be larger than 200 feet. Recommendations for buffers around Flammulated Owl nests are not as numerous as those for other raptors, but this comment will reference two. The following table is from the 2018 Wildlife Habitat Features Field Guide (Kootenay Boundary Region). The buffers recommended range from 100-200 meters to 1000+ meters, depending on the Disturbance Level of Proposed Activities and the Existing Exposure to Disturbance. Assuming that the activities near the nest trees would fall in the Moderate or High Disturbance Level and the Low to Moderate Existing Exposure to Disturbance, the buffers should range from 100-500 meters, less than the 200 feet the Forest indicates in the Final EA. These recommendations are for the Kootenay region, just across the border in Canada.

For the BLM in Utah (Kanab Field Office), buffers around Flammulated Owl nests are listed as [frac14] mile (or 1320 feet), considerably more than 200 feet.

Suggested Remedy:

Project decision should be delayed until project documentation and design features set buffers of at least [frac14] mile around a known nest.

In reality, it is extremely difficult to find the nests of Flammulated Owls. Given the difficulty of finding their nest cavities, protection should be given to areas where the owls are heard or otherwise detected, not just where nests have been found. In the Revised Wildlife Analysis Report, the Forest states that "Some snags could be removed during times when flammulated owls are nesting. To greatly reduce the chances of directly affecting nesting owls, design features (EA, Appendix A) include surveying flammulated owls and implementing timing restrictions that would prohibit activities during nesting season in areas of detections [emphasis added] in the analysis area" (p.15). Further, on page 17 of the Revised Wildlife Analysis Report, the Forest states, "Ground-disturbing activities in known areas of flammulated owl use would not occur from May 1 through August 15 (EA, Appendix A), to reduce the potential for disturbance to breeding owls in or near areas where flammulated owls have been detected [emphasis added]." We support this approach.

However, this statement is not reflected in Appendix A (Design Features) of the EA. Rather, the Forest says, "In

order to protect flammulated owl nesting sites: Restrict project activities to within 200 feet of any verified active flammulated owl nest site between May 15 and August 31. Forest Wildlife Biologist will determine occupancy" (pages 55, 92, and 121). Again, Flammulated Owl nest cavities are extremely difficult to find; the difference between protecting a nest tree and protecting habitat where the owls have been heard or otherwise detected is significant. There may be no nest cavities discovered in a given area but Flammulated Owls might still be detected. Failure to protect habitats most conducive to breeding and where owls have been detected could result in destruction of unseen and unknown nest cavities.

Suggested Remedy:

Project decision should be delayed until Design Features and project documentation reflect the standard on pages 15 and 17 of Revised Wildlife Effects Analysis, quoted above, and not the contradictory Design Features that focus solely on nest cavities.

In response to commenters on the Mud Creek Project, the Forest suggested that an article by Linkhart and Reynolds on the territories used by Flammulated Owls does not tie breeding success to numbers of old-growth trees but to mature and over-mature stands. The article does identify a forest type it calls "old" consisting of ponderosa pine and Douglas-fir from 200 to 400 years old. Linkhart and Reynolds find that territories occupied 12 or more years (out of 16 years in the study) had "more than 75 percent old ponderosa pine/Douglas-fir." Yes, Linkhart and Reynolds use "old" and not "old growth," but is that a difference that really matters here? Ponderosa pine and Douglas-fir ranging from 200-400 years old will, most likely, be considered old growth. Indeed, like the commenters, The Montana Field Guide interprets Linkhart and Reynolds' use of "old" trees to mean old-growth trees: "Territories consistently occupied by breeding pairs were those containing the largest portion (more than 75 percent) of old-growth [emphasis added] (200 to 400 years), whereas territories occupied by unpaired males and rarely by breeding pairs contained 27 to 68 percent old-growth [emphasis added] (Linkhart and Reynolds 1997 (qtd. in Flammulated Owl [mdash] Psiloscops flammeolus). Further, while Linkhart and Reynolds use the term "mature," I could not find the term "over-mature" in the article. Linkhart and Reynolds should stand as a relevant source when the Forest is considering cuts in old-growth habitat. In most circumstances, Green et. al.'s minimum of eight old-growth trees per acre clashes with the needs of Flammulated Owls, particularly breeding pairs. According to Cornell Lab of Ornithology, the "Flammulated Owl has a low reproductive rate and is found mostly in older forests, which can be under pressure for logging" (Flammulated Owl, Allaboutbirds.org).

Suggested Remedy:

Do not log in old-growth habitat where Flammulated Owls have been detected in surveys required by the Revised Wildlife Analysis Report (p.15).

The Revised Wildlife Effects Analysis Report also addresses prescribed burning in areas occupied by Flammulated Owls:

Burning may occur in areas during spring, when flammulated owls are courting and beginning to nest [emphasis added], which could disturb or displace individuals. However, because owls are nocturnal, and the burning would occur during daytime when the owls are sleeping in nest cavities, the disturbance due to burning would be expected to be negligible. If burning is conducted during the spring or early summer, there could be a temporary reduction in the availability of prey (e.g., moths and other insects. Unburned retention patches within areas would ensure not all habitat is burned.

This statement raises questions. It is counterintuitive that owls would sleep through and not flee from activities related to burning, not to mention the sounds and smells once the burn has been established. Not every statement made by the Forest requires evidence, but those statements that run counter to the expectations and reasoning of non-experts or of people who have inadvertently flushed owls from nest cavities should be

supported by documentation.

Suggested Remedy:

Abandon the project until BNF can provide documentation that Flammulated Owls in nest cavities are not disturbed by prescribed burns.

In addition, the mate of the owl in the nest cavity may be roosting nearby but not in the cavity. Burn-related activities are likely to disturb the owl outside. And, as the above quote indicates, these burns may take place when the owls have already started to nest. Burn activities, as indicated above, could be conducted "during spring or early summer [emphasis added] (Revised Wildlife Effects Analysis Report, 15). In early summer, those nest cavities could have eggs, and the prescribed burn could cause the parents to abandon the nest. As mentioned earlier, Flammulated Owls have a low reproduction rate, producing one brood of only two to three eggs per season (Flammulated Owl, Allaboutbirds.org).

Suggested Remedy:

To avoid causing failure of nests, prescribed burns should be avoided in areas occupied by Flammulated Owls or take place outside the nesting period.

Issue: BNF fails to fully protect bald and golden eagles as mandated in the Bald and Golden Eagle Protection Act.

FOB at 10 expresses concern for the lack of analysis for raptors. "The Draft EA contains inadequate analysis of project effects on animal species, including cutthroat trout, bull trout, grizzly bear, lynx, northern rockies fisher, black bear, multiple migratory bird species, cavity-nesting birds (snag habitat), bats, raptors, red squirrels, wolverine and other small mammals, etc. Also missing is an inventory of key wildlife habitat, a violation of NEPA."

While we appreciate and support the Appendix A (Design Features) requirement of [frac12] mile buffers protecting active Bald Eagle nests from timber harvesting and heavy truck traffic, we recommend that those nests be protected by [frac12] mile buffers from all project activities. Peregrine Falcon nests are, appropriately, accorded that level of protection under the Design Features, and Bald Eagle nests should be as well. Bald Eagles are protected not only by the Migratory Bird Treaty Act, as are Peregrine Falcons, but also by the Bald and Golden Eagle Protection Act.

Suggested Remedy:

At a minimum, road construction should be added to the project activities that require a [frac12] mile buffer.

In discussing Golden Eagles, the Revised Wildlife Effects Analysis Report says, "The project occurs within the range of this species; however no known nests occur in the project area, and only 1 incidental detection has been recorded[hellip]. limited nesting habitat exists in the project area around Painted Rocks Lake and other scattered cliffy areas" (p.85). Given the limited habitat and relative ease in spotting nests, which are very large, ideally, a survey could either verify the absence or discover the presence of Golden Eagle nests, making it less likely that a disturbance and, therefore a violation of the Bald and Golden Eagle Protection Act, would occur. Interestingly, this analysis also says, "due to their wide ranging foraging behavior, project activities would have minimal to no discernable effects on Golden Eagle in general" (ibid). In contrast, the Parks and Wildlife Division of Colorado's Department of Natural Resources sees the wide range of foraging territories as reason for further,

not less, protection: "A 'holistic' approach is recommended when protecting raptor habitats. While it is important for land managers to focus on protecting nest sites, attention should also focus on defining important foraging areas that support the pair's nesting effort" ("Recommended Buffer Zones[hellip]" p.1). The Revised Wildlife Effects Analysis Report also says, "If a golden eagle nest is detected, Design Features to protect nesting eagles would be implemented (EA, Appendix A)" (p.85). However, EA Appendix A (Design Features) consistently specifies bald eagle nesting sites (pp.54-55, 91, 120-121).

Suggested remedy:

Add Golden Eagles to the Design Features protecting Bald Eagle nesting sites from all project activities.

Issue: Old growth site-specific amendment does not include specific, measurable standards. BNF fails to fully disclose the effects of using the amendment as opposed to forest plan old growth standards and definition. Old growth amendment has been used for the past 26 years without the required NEPA process.

Old growth is highly valued socially and ecologically. Its preservation should be of high priority on Bitterroot National Forest lands. Much old growth has been lost due to past logging practices, it should be preserved and not logged mechanically. Old growth stands like the one pictured below from the Mud Creek project area (note bandana is 16x16 inches) could be subject to commercial logging down to the minimum threshold of 8 trees per acre allowed with this amendment. BNF should recruit and preserve large trees as specified in the Forest Plan to increase old growth on the forest and comply with forest plan objectives not decrease it by using vague qualitative criteria and minimum quantitative thresholds specified in a non-peer reviewed study that relies on science from 1992

We stated our concerns regarding this amendment in scoping and the recent comment period in FOC et al pg 8-27, FOB et al pg 11-17, NEC et al pg 6-9, Alliance 11-12 and more. We expressed concern for wildlife affected by the amendment like grizzly bears, lynx, wolverine, flammulated owls, pine marten, and pileated woodpeckers, to name a few. We expressed concerns about minimum thresholds that would allow commercial logging and the destruction of the decadence associated with old growth structure. We would also like to incorporate a recent report by Jeff Juel on the history of Forest Service Management of old growth forests in the Northern Rocky mountain bioregion which includes the project area and BNF (Attachment F).

NEC et al pg 20 makes it clear, "Some wildlife species that depend upon unfragmented larger blocks of older forest habitat in addition to the pine marten and pileated woodpecker, include the red-backed vole, the northern flying squirrel, the Canada lynx, northern goshawk, three-toed and black-backed woodpeckers, snowshoe hares, and red squirrels. There can be no valid assessment of the impact of openings without a corresponding analysis of how remaining older forest blocks will be affected for wildlife." This analysis has not been supplied.

We repeatedly asked for a thorough investigation of the differences on the ground of old growth using the forest plan standards and old growth using the proposed amendment. We asked for a thorough analysis of the differences in effects on wildlife using each method. Final EA and Draft Decision Notice only supply old growth statistics in the project area using the proposed amendment. How can BNF or the public compare the current forest plan standards with the proposed amendment with no data on old growth as analyzed with forest plan standards. At minimum, FS should have compared using Green et al with and without the 40 acre stand size so the public could discern the effects of this amendment on the objectives and standards agreed upon in the Forest Plan. We asked for this analysis in FOB et al pg 11, "The public understanding of old growth issue is also hampered by the fact that there's no map in the DEA showing the analysis area being utilized for old growth, with the various Management Areas (MAs) and all existing old growth. Please also describe how the amendment reducing stand size to less than 40 acres will affect the distribution of old growth in the project area by MAs.

Forest Service fails to fully analyze old growth amendment impacts nor does it address deficiencies in percentages of old growth habitat across the forest. This is a violation of NEPA, NFMA and the APA. We object to the amendment and old growth treatments and add to previous concerns with the following information.

According to Draft DN pg 30, "A project-specific amendment to support using the old growth definitions in Green et al. for the Mud Creek Project rather than the 1987 Forest Plan old growth criteria would not result in any negative cumulative effects when considering the foreseeable Gold Butterfly and Bitterroot Front projects. Since old growth stands have been identified in all three project areas using the definitions in Green et al., a project-specific amendment to support using the Green et al. definitions for the Mud Creek Project would not result in changes to the amount of old growth identified or managed in any of these projects." BNF refuses to analyze the project area using the forest plan standards and compare them to Green et al. This is a gross misrepresentation to the public. Using Green et al for 26 years does not remove the responsibility of analyzing the effects of illegally using it instead of Forest plan standards on these three projects, past projects, and forest-wide. In Appendix B response to comments page 21, BNF states, "7 out of 10 potential old growth stands do not qualify as old growth under the Forest Plan's criteria; however, they do qualify under the criteria provided by Green et al. (1992). As stated in the Draft EA, Issue 3 (page 72) and SILV-001 (page 48)." The Draft EA, Final EA or SILV-001 do not make the above claim. Instead, both areas state the following with no determination as to what criteria was used, "Past Common Stand Exams stored in the FS Veg database as well as the historic aerial photo interpreted old growth GIS layer was used to determine the current old growth status for analysis for the watersheds within the Mud Creek project. Approximately 8,512 acres (18% of the project area) of old growth are currently mapped within the Mud Creek project area. Of these acres, 1,400 acres have been field verified as old growth through on-the-ground, statistically sound Common Stand Exams and 7,113 acres are mapped in a historic old growth layer identified through aerial phone [sic] interpretation. See Map 2 below for locations. Old growth status will be validated during the stand diagnosis within proposed treatment units during the implementation phase." This shows that only 1400 acres have been verified on the ground and how they were verified is not specified. Again, the public has no on the ground data to compare the effects of using Green et al vs. forest plan standards for old growth.

In a Bitterroot Star article last year, ranger Steve Brown confirmed that the Forest has used 'Green, et al' for 26 years but did not bother to amend the Forest Plan to say that Green, et al, would be used to define old growth. (Forest withdraws approval of massive Gold Butterfly project) BNF admits that it has been illegally using Green et al for 26 years. This equates recognition that a forest-wide amendment is warranted.

If BNF has been using Green et al, to what degree? What specific criteria have they been using? Is it consistent? How long has BNF been ignoring the 40 acre stand requirement? What damage has been done? To take the required hard look at the effects of this amendment on old growth and associated flora and fauna, BNF must analyze how old growth has been identified and managed since 1987 and how that has changed with the introduction of Green et al.. While BNF claims that it has used Green et al, a FOIA request for documents concerning the Westside project revealed a stand exam of potential old growth. The Silviculturist did a walk through and claimed it was not old growth. The biologist claimed it was not old growth because "there are old stumps." Green et al does utilize the presence of stumps as criteria. Further, a counting of rings on new stumps post management action, revealed the area was in fact old growth but is no longer even by Green et al minimum thresholds, yet another example of how new criteria is reducing old growth on the forest.

The old growth analyses across the entire Forest - for every ongoing project, monitoring effort, and planning and analysis process - are fundamentally flawed because the Forest Service is using the wrong definition. The Forest Service's failure to use the Forest Plan definition of old growth, and consequent failures to demonstrate compliance with Forest Plan old growth standards for retention and viability, violate NFMA and the APA. If the Forest Service no longer wants to use the Forest Plan old growth standards and definition, then it must implement a formal Forest-wide Forest Plan amendment in a process that complies with NFMA and NEPA. See Attachment G Native Ecosystems Council vs US Forest Service, 418 F. 3d at 963.

In Wildwest Inst. v. Seesholtz (Attachment H), the Forest Service did not just withdraw a timber sale; instead, it agreed to produce an EIS for a forest-wide forest plan amendment on old growth. The Forest Service's proposed solution to adopt a project specific amendment to the Forest Plan for the Mud Creek Project does not address the Forest-wide status of this legal violation, but rather continues to kick the can down the road, as the agency has been doing for the past 27 years.

Whether BNF should follow the standards in the forest plan or Green et al should only be decided during a forest-wide, forest plan amendment using an independent scientific review process that includes a comparison of old growth on the forest using both techniques, recent science concerning old growth, old growth species, and climate change. BNF claims that Green et al is the "best available science." It seems the concern is with the standard itself, not site-specific needs on the ground. The same site-specific amendment is proposed for the Bitterroot Front Project, Mud Creek, and Gold Butterfly encompassing nearly 250,000 acres of BNF which is nearly half of the forest not designated or proposed Wilderness. This is half the manageable forest not including all projects for the past 26 years. A forest-wide amendment and the thorough analysis required is mandatory to ensure that forest and highly valued old growth are protected using the best available science as required in the 2012 planning rule and NEPA. Site-specific amendments are meant to address unique characteristics of a particular forest area, not to repeatedly address conditions that are common throughout an entire forest or region. A site-specific amendment must follow the forest plan objective which is to distribute sufficient old growth throughout the forest to support viable populations of wildlife. Smaller patches of old growth and age only criteria do not comply. The Forest Plan is the contract with society. Society values old growth which they see as large trees (few people wander the forests with coring capability). The Forest Plan old growth standards were created to protect old growth and create habitat sufficient for all wildlife including the indicator species which rely on mature forests and large trees. BNF has ignored comments and pleas from the public to protect old growth on this project. Clearly, the amendment must be proposed as a forest-wide Forest Plan amendment, not amended away one geographic area at a time. If a Forest Plan amendment constitutes a "significant change" in the Forest Plan, the Forest Service must prepare an EIS and analyze the amendment in the same procedure as it analyzed the Forest Plan 36 C.F.R. [sect]219.10(f) (1982). The required procedure for analysis of a significant Forest Plan amendment is set forth in the NFMA regulations. 36 C.F.R. [sect]219.12 (1982).

The DDN explains, "The amendments to the forest-wide and management area standards for old growth and coarse woody debris are based on the variety of forest types in the project area. The current forest plan description of old growth was derived from forest types different than those in the project area, and more appropriate scientific information to guide management direction for old growth in the project area is available. Similarly, the current management area direction for coarse woody debris retention does not recognize the differences in historic range of variation of coarse woody debris among forest types, as shown in current best available scientific information. (DDN Appendix B. page 16)" However, if one delves into the FEIS for the forest plan, they will find that all forest types as well as age class were considered when settling on the forest plan standards for old growth. The age requirements were not included in the standards one would imagine because it is laborious and often detrimental to core trees. Again, the forest plan standards protect mature forests and retain old trees which Green et al recommends.

If BNF insists on using site specific amendments, it must analyze and justify why half the forest should use Green et al and the other half should continue with forest plan standards. Judge DeSoto was recently quoted in the Missoulian concerning the Soldier Butler project, "You can isolate anything in a site-specific analysis," DeSoto warned the federal attorneys defending the Forest Service. "But if you don't analyze at a programmatic level, you run afoul of your own documents pretty quickly."

In the DDN (response to comments) B-22, you state, "It is important to note that while Green et al. (1992) and the Forest Plan provide minimum criteria for identifying old growth, that does not mean all stands will be treated and harvested to the minimum criteria numbers. Treatments will be based on site specific stand data as well as how

that stand fits into the greater landscape." It should be noted that Green et al provides minimum criteria for "identifying old growth" not managing or defining old growth. Here BNF makes it clear that at least some or maybe all will be reduced to 8 trees per acre depending on site specific stand data. This only adds to the argument that conditions based analysis falls short because it does not use the best available science (site specific, on the ground) and leaves the public out of the equation during the NEPA process. When those stands are evaluated and the public is finally informed of how much old growth will be reduced to the minimum with roads and temporary roads constructed through them, the public will have no recourse.

Draft decision notice page 29-30 claims "Green et al. (1992) represents the best available scientific information to define old growth." Green et al protocols are not in and of themselves sufficient protocols for determining old growth as is stated on page 11. Field work is crucial to identifying old growth, but that rarely happens. On the Gold Butterfly project only spot checks were done to verify modeled old growth stands. Mud creek has yet to analyze over 7000 acres. SILV 001 describes current FS vegetation layers that have identified old growth to be analyzed, are these vegetation layers consistent with Green et al? What do other regions use to define old growth? Other regions include the identification and protection of mature forests that are moving towards a complete host of old growth characteristics and function, especially where they might connect and create larger patches of old growth and encourage distribution across the landscape as BNF Forest Plan objectives state.. This is provided for in the current Forest Plan dbh criteria.

After reading the DEA, we asked BNF to supply the latest science on the natural historic range regarding patch size, edge effect, and amount of interior forest old growth in the Bitterroot NF. The Mud Creek Final EA does not properly analyze and disclose the natural historic range vs. current conditions regarding patch size, edge effect, and amount of interior forest old growth in the Bitterroot NF.

Lehmkuhl et al. (1991) state:

? Competition between interior and edge species may occur when edge species that colonize the early successional habitats and forest edges created by logging (Anderson 1979; Askins and others 1987; Lehmkuhl and others, this volume; Rosenberg and Raphael 1986) also use the interior of remaining forest (Kendeigh 1944, Reese and Ratti 1988, Wilcove and others 1986, Yahner 1989). Competition may ultimately reduce the viability of interior species' populations.

? Microclimatic changes along patch edges alter the conditions for interior plant and animal species and usually result in drier conditions with more available light (Bond 1957, Harris 1984, Ranney and others 1981).

? Fragmentation also breaks the population into small subunits, each with dynamics different from the original contiguous population and each with a greater chance than the whole of local extinction from stochastic factors. Such fragmented populations are metapopulations, in which the subunits are interconnected through patterns of gene flow, extinction, and recolonization (Gill 1978, Lande and Barrowclough 1987, Levins 1970).

Final EA fails to demonstrate the necessity of amending the Forest Plan to remove the minimum stand size of 40 acres.

Final EA claims new definitions and removal of the 40 acre standard is "more inclusive" and, "With the new habitat type-based definitions, more stands, and a greater variety of stands will meet the old growth minimum standards in the Mud Creek project area than would have with the original generic Forest Plan definition" (FEA page 75). DDN pg 29 states, "Management area direction related to minimum stand size to classify stands smaller than 40 acres as old growth to better align with Forest Service handbook direction and to protect smaller stands of old growth that are ecologically important." But specialist reports and FEA do not demonstrate that more areas qualify using this method. Furthermore, there is currently nothing that prohibits BNF from protecting any and all old growth defined by any definition now, including smaller stands. The amendment is not necessary

to be more inclusive. For example, the Como Forest Health Project placed an upper dbh limit of 20" for treatment units that contained old growth regardless of acreage. From the Como ROD (Attachment I) : "We would reduce stand density in both units to between 60 and 80 BA and would not harvest trees 20 inches diameter at breast height (DBH) or larger. One of the old growth criteria in Green et al (2005) is a minimum of eight trees 21 inches or larger. By retaining trees 20 inches or larger, we will retain all the trees that qualify as old growth and provide replacement trees as the older, larger trees age and die. We also meet the minimum stand density characteristic for old growth by maintaining stands above 60-80 BA (Green et al. 2005)" (emphasis added). The 40 acre stand size encourages if not mandates old growth recruitment in concert with Forest Plan objectives.

Green et al caution: "Do not accept or reject a stand as old growth based on the numbers alone; use the numbers as a guide." In other words, there is more to old growth than the trees; there is also understory, ground cover, wildlife cover, down woody debris, snags, soil organic matter, etc. Green et al provide no minimum criteria for any of these associated characteristics. The Forest Plan Old Growth standards do include minimum criteria for snags and down debris, and the Forest Plan states that in old growth, heart rot, broken tops, and lichens/mosses are common; stands are uneven aged or multistoried (p. II-19). In the recent Buckhorn project (Attachment K), BNF used Greene et al to disqualify stands as old growth based solely on age and numbers. This allowed those mature stands that might have qualified as old growth by FP standards to be harvested. Removing these mature stands from the forest misses an opportunity for recruitment and replacement of old growth at the detriment of wildlife dependent on mature forests. "Unit 14 contains portions of two stands (4502062 and 4502063) that are identified as OG in the OG database. OG plots installed in the portions of these stands within the Unit 14 boundary on 11/14/2019 determined that 4502062 did not qualify as OG because the trees >20" DBH averaged about 114 years old, with a range from 76 years to 134 years. OG in this habitat type group is defined as more than 8 trees/acre that are over 21" DBH and are greater than 170 years old. Harvesting in this stand will not reduce the existing OG percentage in this drainage/MA polygon because the trees are too young to qualify as OG." (Attachment L Buckhorn PF WILD-001 emphasis added). Green et al criteria do not seem as inclusive as FEA states. The use of Green et al instead of the forest plan standards for old growth affects pileated woodpeckers that rely on large trees (>20 dbh) for nesting. It also affects pine marten that rely on mature forests. Christensen et al (1993) notes that elk select resting and feeding sites based on control of energy transfer rather than forage availability, and thus retention of larger trees where possible is beneficial. NFMA directs forests to maintain and improve habitat of Management Indicator Species (MIS).

While eliminating the Forest Plan's 40-acre old growth minimum will require the protection (protection is already allowed) of smaller old growth stands, small stands do not always have the same ecological value as larger ecologically connected stands. Green et al (p. 12) state:

"The third point to bear in mind when evaluating old growth is that a stand's landscape position may be as important, or more important than any stand old growth attribute. The landscape is dynamic. We need to do more than draw lines to manage this dynamic system. Consider the size of old growth blocks (large blocks have special importance), their juxtaposition and connectivity with other old growth stands, their topographic position, their shapes, their edge, and their stand structure compared to neighboring stands. Stands are elements in dynamic landscape. We need to have representatives of the full range of natural variation, and manage the landscape mosaic as a whole in order to maintain a healthy and diverse systems."

USDA Forest Service (1987) states: "Isolated blocks of old growth which are less than 50 acres and surrounded by young stands contribute very little to the long-term maintenance of most old growth dependent species."

It appears that the Bitterroot Forest Plan (p. III-4) also recognized the importance of landscape position, directing BNF to: "Provide 40-acre stands of old growth by coordinating management activities in this area with activities in adjacent management areas and with intermingled riparian and unsuitable management areas."

Clearly, a bunch of isolated, small old growth stands do not equal a few large, well-connected old growth stands.

And smaller old growth stands can be protected and moved towards OG status by drawing a line around them to 40 or more acres and providing a dbh limit to recruit old growth as was done in the Como project.

BNF fails to demonstrate that Green et al is the best available science. Numerous deficiencies in Green et al have been pointed out by other scientists (Yanishevsky, 1994; Shultz 1992), including a lack of peer review, a lack of new field work to verify existing plot data, no estimates of the natural range of variation of old growth, and no criteria for the evaluation of old growth quality. Green et al include only two quantifiable measurements: trees per acre meeting age and dbh criteria and basal area. If BNF wanted to more accurately assess old growth, they could have developed criteria that build on Green et al and analyzed that as an alternative. For example, in old growth Ponderosa/Doug Fir, they could have increased the trees per acre to Green et al's average of 15, specified Green et al's average of 6 snags per acre, included a minimum for CWD, specified a number of broken-topped/hollow trees per acre, etc. Such an alternative amendment would certainly be more scientifically sound and more quantifiable and repeatable than the one offered in the decision notice.

Green et al. (1992) does not represent the best available science for managing old growth. Numerous other, more recent publications give recommendations for the management of old growth and are discussed below. An important question, not answered in the Mud Creek EA, is: How will BNF use Green et al identification criteria to manage old growth on the Mud Creek project and other future and ongoing projects? The amendment states only it will use the "quantifiable and qualitative criteria." We are concerned that BNF will use the new standards to cut more old and large trees. They will be able to do this in several ways:

1. Although Mud Creek FEA states, "treatment units containing old growth would retain their old growth status", using Green et al allows old growth status in Ponderosa Pine/Douglas Fir to be retained if old/large trees are cut to their minimum of only 8 old/large trees per acre versus the 15 required in the existing Forest Plan, and the 17 per acre average of Green et al.;

2. 8 trees per acre qualifies as a seed tree or shelterwood cut, which is considered an opening (clearcut) in the by Region 1 standards. BNF could use the amendment to eliminate the old growth habitat defined by the Forest Plan, thereby cutting more large trees;

3. Using Green et al's standards may bolster the old growth percentages above the Management Area (MA) minimums, thereby allowing old growth to be cut down to the MA minimums of 3-8%.

The assumption in the Draft DN is that the old growth amendment will protect smaller patches of old growth because it will "be more inclusive" while the forest plan standards would allow these smaller stands to be cut. A similar argument can be used against the proposed amendment: that it could remove stands that do not quite meet the age requirements, but that are already functioning as old growth habitat for some species. For example, the DSEIS for Gold Butterfly, p. 19, claims "Pileated woodpeckers and marten are not old growth dependent species. They are associated with mature and over-mature forests that contain habitat components such as large trees, large snags and down woody material that are often found in old growth forests, but also utilize younger forests that contain some of those habitat components. Therefore, forests that do not meet the old growth definitions can and do provide habitat that contributes to the viability of these species at several scales[hellip][hellip]While pileated woodpeckers are often associated with mature forests, the presence of large trees or snags for nesting is reported to be more important than forest age. But the proposed amendment will allow BNF to cut the mature and over-mature forests you discuss above, so it appears that the proposed amendment could be detrimental to pileated woodpeckers and marten, who apparently do not have a minimum tree-age requirement. Yet the FEA pg 110 claims, "No change to effects on the management indicator species are expected from this amendment." Without data and maps comparing the acreage of Forest Plan old growth to Green et al old growth, it is impossible to assess the effects of the proposed amendment. BNF has not taken the hard look necessary to justify this amendment.

In focusing on the "minimum thresholds" for old growth, BNF ignores other results of Green et al, most importantly that they surveyed 4,847 plots of Western Montana, Zone 1, Ponderosa-Doug Fir-Western Larch old growth and found an average of 17 old growth trees per acre (well above their minimum of 8), along with 6 snags per acre (no minimum requirement). Therefore, it appears that Green et al were establishing minimum criteria and not advocating that 8 trees per acre were plenty. Their management recommendations (p. 12) advise caution, and to remember that old growth stands are irreplaceable within human life spans:

"Old growth is valuable for a whole host of resource reasons such as habitat for certain animals and plants, for aesthetics, for spiritual reasons, for environmental protection, for research purposes, for production of unique resources such as very large trees. Unusual natural communities, etc., the resource values associated with potential old growth stands need to be considered in making allocations.

At the same time, there may be some stands with trees so large or so old that they are unique. We should always maintain a good representation of these very old unique and outstanding stands, because they are irreplaceable within human life spans. Remember to value the truly unique and outstanding, wherever it may be."

Certainly, the use of Greene et al minimum numbers to manage old growth would put old growth stands at peril. The amendment does not take into account blowdown. It is common for blow down to occur when surrounding trees are removed. Even cutting to 10 or 12 trees per acre could reduce the stand to less than minimum requirements.

BNF fails to analyze the proposed amendment's significance in the context of the larger Mud Creek EA, particularly concerning subsequent management of old growth and also the cumulative impact with the proposed CWD site-specific amendment. Amending old growth standards (identification standards) does not stand alone; BNF must disclose specifically how old growth will be managed under a new definition. Many scientists have provided management recommendations for old growth, and all recommend retaining all or nearly all old/large trees (Yanishevsky; 1994; Hessburg et al., 2015; Fielder et al., 2007a,b; Wales et al., 2007). Rapp (2003) states "No management activities should be implemented in old growth. Recent studies have shown that old growth ecological systems (not just the trees) are the most complex and important feature of a forest."

Fielder et al (2007b) state that "old-growth functions increase as numbers of large trees, snags, and downed logs increase", again suggesting more is better. Green et al (1992) specified a minimum basal area of 60 ft2/acre, and Fielder et al's (2007a) recommendations stated: "Reserve basal areas of 10-18 m2 per hectare (45-80 ft2/acre) are prescribed for post-treatment stands. Densities at the high end of this range (80 ft2/acre) are retained in stands dominated by large trees." None of these other references are included or discussed in the FEA, which speaks to our concern that the proposed amendment will be used to cut, rather than preserve, old growth. Again, the Mud Creek DDN (p. B-22) states: "while Green et al. (1992) and the Forest Plan provide minimum criteria for identifying old growth, that does not mean all stands will be treated and harvested to the minimum criteria numbers." (emphasis added) Apparently, then, some old growth stands on the Mud Creek project will be cut to the minimum, validating our concerns.

BNF fails to analyze the proposed amendment's significance in the context of the larger Mud Creek FEA, particularly concerning subsequent management of old growth and also the cumulative impact with the proposed EHE site-specific amendment which allows higher road densities and reduced thermal cover.

The EHE site specific amendment has been used multiple times as explained below. It will also be used in the Gold Butterfly project and the Bitterroot Front project. BNF proposed a programmatic forest plan amendment for Elk Habitat Objectives on December 18, 2019. The public commented and the process remains in limbo. It seems just doing site specific amendments for every project except CE's where it is illegal is easier than taking a hard look and completing a more thorough NEPA process and analysis of effects across the forest that a programmatic forest plan amendment would require.

BNF fails to analyze the effects of the old growth amendment on wildlife as compared to effects using the Forest Plan standards for the Mud Creek project.

Wildlife species possibly detrimentally affected include cutthroat trout, bull trout, grizzly bear, lynx, fisher, elk, multiple migratory bird species, cavity-nesting birds (snag habitat), bats, raptors, red squirrels, wolverine, marten, etc. The minimum number of Old Growth trees under Green et al. may be too low for Flammulated Owls, a Montana Species of Concern and a U.S. Forest Service Sensitive Species, according to the Montana Field Guide: "Territories consistently occupied by breeding pairs were those containing the largest portion (more than 75%) of old-growth (200 to 400 years), whereas territories occupied by unpaired males and rarely breeding pairs contained 27% to 68% old-growth." On the Mud Creek project, if the Green et al old growth standards result in more commercial timber harvest than the Forest Plan standards would allow, then habitat would likely be fragmented and degraded, and more roads might be built.

DROD states, "Based on the NEPA analysis in the EA (Mud Creek Project EA, Appendix D) and as summarized here, I have determined that the amendment will not have substantially adverse effects on any resource or use and will not substantially lessen protections for species (EA). Furthermore, the planning rule at 36 CFR 219.13(b)(5)(ii)(B) states that where I have made a Finding of No Significant Impact, there is a rebuttable presumption that the amendment will not have substantial adverse effects. No evidence has been presented to rebut that presumption." That statement does not constitute a "hard look" as is required by NEPA. The FEA includes no documentation which indicates the Agency performed any research or post-project monitoring of past management actions that allows for a comparison of wildlife impacts from Forest Plan old-growth treatments vs. the proposed Green amendment old-growth treatments. It only promised to monitor Como project (still ongoing) and Gold Butterfly (still in planning) old growth management. It will take more than 20-30 years to truly discern the full effect of old growth management activities, by which time the Mud Creek project will be complete.

BNF fails to comply with the Forest Plan for recruitment of old growth.

Other than the two units in the Como project mentioned in this paper, we can find no evidence that BNF has done due diligence to recruit old growth to comply with management area standards for old growth in the past 26 years. Projects have had third order drainages lacking in old growth, but no management activities were designed to rectify the situation in the project area. Projects merely kept the current level of old growth stable. It seems BNF has been in violation of NFMA for much more than using Greene et al.

Forest Service ignores Effects of Management Activities on Wildlife Species and Violates NEPA and NFMA Requirements.

The DDN claims there will be no deleterious effects on "any resource" due to the old growth amendment. That statement does not constitute a "hard look" as is required by NEPA. The FEA/DDN includes no documentation which indicates the Agency performed any research or post-project monitoring of past management actions that allows for a comparison of wildlife impacts from FP (1987) old-growth treatments vs. the proposed Green amendment old-growth treatments.

Courts have held that a "hard look" includes studying not only research that affirms a specific management action but analyzing research that contradicts that same action.

"NEPA's 'hard look' obligation requires agencies to consider potential environmental impacts, including all foreseeable direct and indirect impacts, and should involve a discussion of adverse impacts that does not improperly minimize negative side effects." WildEarth Guardians v. U.S. Bureau of Land Mgmt., 2020 WL 2104760, at 3 (D. Mont. 2020) (quotations and citations omitted).

NEPA's "hard look" requirement does not permit "a soft touch or brush-off of negative effects." Native Ecosystems Council v. U.S. Forest Serv., 428 F.3d 1233, 1241 (9th Cir. 2005).

In the case Ecology Center inc. v. Austin (2005), the 9th Circuit Court held that "[hellip] the Forest Service's decision to treat old-growth violates, both NFMA and NEPA, [hellip] ." Specifically, the Court said that:

While Ecology Center does not offer proof that the proposed treatment causes the harms it fears, the Service does not offer proof that the proposed treatment benefits[mdash]or at least does not harm[mdash]old-growth dependent species. Ecology Center argues that because the Forest Service has not assessed the effects of old-growth treatment on dependent species, the Service cannot be reasonably certain that treating old-growth is consistent with NFMA's substantive mandate to ensure species diversity and viability. As a result, especially given the scientific uncertainty surrounding the treatment of old-growth stands, the Forest Service's decision to treat additional old-growth stands was arbitrary and capricious.

"The EIS did not address in any meaningful way the various uncertainties surrounding the scientific evidence upon which the decision to treat the Lolo National Forest old-growth rests." Seattle Audubon Soc'y v. Espy, 998 F.2d 699, 704 (9th Cir. 1993). Although the EIS identifies the public's concerns regarding the impact of treatment on dependent species as "key" or "driving" issues, the EIS does not actually explain in any detail the bases of those concerns, much less address them. [hellip] The EIS discusses in detail only the Service's own reasons for proposing treatment, and it treats the prediction that treatment will benefit old-growth dependent species as a fact instead of an untested and debated hypothesis. Even if the Service considered these issues but concluded that it need not or could not "undertake further scientific study" regarding the impact of treatment on dependent species, it should have "explain[ed] in the EIS why such an undertaking [wa]s not necessary or feasible." Id. For these reasons, we also find that the Service's analysis of the impact of treating old-growth to be inadequate under NEPA."

The Works Cited list contains little concerning wildlife with a publication date more recent than 2007. The unwillingness to accept that science is "a dynamic never ending, self-correcting process." and then act accordingly disregards science. There is an abundance of readily available wildlife research published after 2007 which is applicable to this proposed project.

FEA fails to address recent science and the proposed amendment effects on canopy cover and Canada Lynx.

Already heavily roaded, the Mud Creek project area is used by Off Road Vehicles (ORV), hunters, and during the winter months, snowmobiles. The trail systems are used by hikers, runners, and equestrians. As Squires et al. points out, modifications/reductions to forest canopy cover increase motorized winter use and decrease critical habitat for Canada lynx.

The functional response of Canada lynx to increasingly avoid areas selected by motorized recreationists and share landscapes at fine scales with non-motorized users provides land managers a useful framework to consider recreation impacts. The environmental gradients that are most important for managers to consider when evaluating potential disturbance between lynx and recreationists are forest canopy closure, road density, annual precipitation, and slope.

For example, given the sensitivity of Canada lynx and winter recreationists to changes in forest canopy cover, management actions that modify forest canopy cover through tree removal in recreation areas, whether for silviculture or fire/fuels management, could increase the spatial footprint of motorized winter recreation and decrease critical habitat for Canada lynx, especially in mid-elevation forests located on north-facing slopes. (Squires 2019)

Finally, the Biological Assessment for Canada lynx documents the importance of peripheral areas as:

Peripheral populations may contain valuable genetic, physiological or behavioral adaptations that are unique to their ecological success. Because suitable habitats in areas where populations act as metapopulations are spatially separated, the persistence of a metapopulation is dependent on the efficiency and success of dispersing animals in reaching isolated patches of suitable habitat. When patches are fragmented and connections between patches do not exist, recolonization becomes problematic and the metapopulation may be unable to persist, even though patches of suitable habitat remain (Meffe and Carroll 1997 p21). Additional fragmentation and isolation of suitable habitat occurring as a result of land management activities can not only affect small isolated habitat patches supporting smaller populations but also large contiguous patches supporting higher population levels.

USDA Forest Service 1999. Biological Assessment of the Effects of National Forest Land and Resource Management Plans and Bureau of Land Management Land Use Plans on Canada Lynx. 149p.

FEA fails to acknowledge the effects of the proposed amendment on wolverine that are present in the project area. Though Wild 001 claims only one wolverine has been verified near the project area, wolverines roam long distances. The same wolverine was caught on camera in Willow Creek as well as Skalkaho Creek in the Sapphires. The wolverine caught on camera near the project area was part of a very small, and not comprehensive volunteer program. Less cameras and stations were set up each year. It hardly constitutes a hard look at wolverine presence in the project area. BNF still must consider the effects of this amendment on Wolverine. Their status is still awaiting a court decision.

The old growth amendment is vague and difficult to discern specific quantifiable criteria. In use, it seems to rely more heavily on age rather than dbh limits as demonstrated in the Buckhorn project. The diameter limit in the forest plan protects all old growth by forest plan or greene et al as in the Como Forest Health Project described earlier. Appendix D pg 8 states, "Key attributes include age, numbers, diameter of the old tree component within the stand, and stand density. Minimum thresholds have been established for these attributes. Associated characteristics are also defined such as probabilities of coarse woody debris, number of canopy layers, and number snags over 9 inches diameter at breast height." How will the minimum threshold of snags comply with forest plan standard #3, "All snags that do not present an unacceptable safety risk will be retained." According to SILV 001, "Old growth is measured at the stand level using habitat type, large tree age, diameter at breast height (DBH), and basal area." Note there is no mention of the structural attributes, CWD, canopy layers, or number of snags over 9 inches DBH.

Suggested Remedy::

Delay Mud Creek project Decision until a programmatic forest-wide amendment for old growth is completed with thorough analysis as required by NEPA and an independent scientific review to discern the best available science.

Issue: BNF fails to fully disclose the direct, indirect, and cumulative effects of the Coarse Woody Debris (CWD) Amendment on wildlife, soils, and old growth.

We express our concerns on the coarse woody debris amendment in FOB et al at 21 and 41-42 and in NEC et al at 7. These concerns have not been addressed and carry over to this objection and we continue the discussion.

FEA at 38 states, "The purpose of the coarse woody debris amendment is to resolve the contradictory direction within the existing standards and ensure the amount of coarse woody debris to be left on the ground aligns with the historical ranges identified for the Fire Groups present within the project area."

We would first like to address the contradictory direction. The old growth standard requires 25 tons of CWD 6 inches in diameter and greater while management areas require 10-15 tons of CWD of 8 inches in diameter or

less. At first glance this could be a contradiction, but not when you consider the impacts to wildlife that require large downed woody debris to survive. Old growth areas require larger diameter downed wood to support these animals. The replacement standard for the forest requires 3 inches in diameter or greater. Yes, large downed logs could be part of this, but it is not required as in the old growth standard. After logging little is left of the larger diameter trees and anything merchantable (7 inch dbh) would be removed. This amendment would allow small branches to make up the entire CWD requirement literally leaving wildlife out in the cold. By having the two standards, old growth will retain larger downed woody debris and function as habitat for wildlife, larger logs weigh more making this larger tonnage more than attainable.

We express our concerns in FOB et al at 35, "The analysis for the fisher, as for most wildlife, doesn't disclose the direct, indirect or cumulative impacts on important habitat components, such as snags, logs, foraging habitat configuration, connectivity, cover, prey species impacts, etc. especially with changes to CWD and thermal cover standards." FEA claims no fisher have been sighted in the project area. Fisher are difficult to see and no formal survey has been conducted, but a number have been sighted on remote cameras near the project area.

BNF has failed to cite "science to support its assumption that the FS management will result in snags and down logs in abundance to support viable populations. In fact, it proposes site specific amendments for Coarse Woody Debris (CWD) and thermal cover. (FOB et al at 21)." In Lands Council v McNair, the Ninth Circuit Court of Appeals ruled that FS "must both describe the quantity and quality of habitat that is necessary to sustain the viability of the species in question and explain its methodology for measuring this habitat."

BNF has also failed to provide monitoring "to support the DEA claims of the benefits of these amendments to snag and down log-dependent species' population numbers or distribution. No estimates of snags for the project area state how statistically robust the project area surveys are for making accurate estimates and analyses. (id at 21)"

Lehmkuhl et al. (1991) state:

? Competition between interior and edge species may occur when edge species that colonize the early successional habitats and forest edges created by logging (Anderson 1979; Askins and others 1987; Lehmkuhl and others, this volume; Rosenberg and Raphael 1986) also use the interior of remaining forest (Kendeigh 1944, Reese and Ratti 1988, Wilcove and others 1986, Yahner 1989). Competition may ultimately reduce the viability of interior species' populations.

? Microclimatic changes along patch edges alter the conditions for interior plant and animal species and usually result in drier conditions with more available light (Bond 1957, Harris 1984, Ranney and others 1981).

? Fragmentation also breaks the population into small subunits, each with dynamics different from the original contiguous population and each with a greater chance than the whole of local extinction from stochastic factors. Such fragmented populations are metapopulations, in which the subunits are interconnected through patterns of gene flow, extinction, and recolonization (Gill 1978, Lande and Barrowclough 1987, Levins 1970).

Instead, the amendment seems focused more on fire. It includes fire groups to identify how much CWD should be left on the ground after logging. Wildlife like fisher and marten are not mentioned. A replacement standard should not include designations like fire groups that have not been created through the NEPA process.

FOB at 42 states our concerns for soils. "Coarse Woody Debris (CWD) is defined by the BNF as greater than 3 inches in diameter. The requirement to maintain various levels of CWD can be met by maintaining smaller pieces like branches while eliminating the longer-term supply of soil organic matter of larger material. There is far more

ecological value and less fire danger from downed 3- foot logs than there is from branches." Project activities remove trees that would eventually become soil, but no analysis on this deficit to soil has been conducted either.

We were also alarmed that layout crews will determine CWD and soil damage. "If the layout crew or other resource specialist survey does not identify lack of CWD and/or evidence of past management (such as excavated skid trails, tree stumps or persistent fire consumed CWD, high severity fire effects), no soil inventory in units is needed." Layout crews are not trained observers of soil damage. This was not remedied in FEA.

NEC et al at 7 states, "The current forest plan direction prevents any timber management activities in old growth based on old growth criteria, which include retention of 75% of the site potential canopy cover, multiple age classes, 25 tons/acre of coarse woody debris, 2 larger snags per acre and many trees with heart rot and broken tops." The CWD amendment will affect old growth standards and functionality. FOB et al at 17 asks, "how will you retain old growth characteristics in Mud Creek beyond the number of trees? CWD is an important characteristic, yet the DEA plans to amend CWD standards in the project area." Analysis fails to demonstrate the benefits of smaller diameter CWD and less tonnage. It does claim fire danger of larger downed wood, but no studies have been shared that show downed logs burn more readily than smaller debris. Logic would have us think just the opposite. FEA at 38 claims, "to reduce fire intensity (and protect soil productivity, big game movement), heavy amounts of coarse woody debris should not be left in treated stands in the Mud Creek project area." Big game movement is not a forest plan objective for the standard non-game wildlife habitat is. BNF does not demonstrate that less woody debris combined with thinning will reduce fire intensity, Bradley et al 2016 shows the opposite.

FOB et al at 34 also expresses concern for grizzly bears. "Red squirrels make whitebark pine nuts available to grizzly bears. The removal of white bark pine, the amendment to CWD, and the amendment to thermal cover will directly affect red squirrels." This is not analyzed in the FEA. Over the next 20 years grizzlies should be expected in the project area. Analysis before record of decision is warranted.

FEA at 37-38 claims, "Since the Forest Plan was signed, additional science is available regarding the amount of coarse woody debris that would be expected in different habitat type groups (Fisher & Bradley, 1987; Graham et al. 1994; Brown et al. 2000), which provides more refined guidelines for meeting the Forest Plan goals and Mud Creek Project Environmental Assessment objectives. The current management area direction for coarse woody debris retention does not recognize the differences in historic range of variation of coarse woody debris among forest types, as shown in current best available scientific information." Again, the determination of best available science is conducted without proper NEPA and an independent scientific review process on multiple projects throughout the forest.

Suggested Remedy:

Delay Mud Creek project decision until a programmatic forest-wide amendment for CWD is completed with thorough analysis as required by NEPA and an independent scientific review process as described in FOB EHE scoping comments to discern the best available science.

Issue: Elk Habitat Effectiveness (EHE) site-specific amendment including hiding cover and thermal cover omits replacement standards, the same site-specific amendments have been overused across the forest, and BNF does not fully disclose and analyze the direct, indirect, and cumulative effects on wildlife and watersheds in violation of NEPA, NFMA, and APA.

We are alarmed by the ubiquitous use of this suspension of EHE standards across the forest, its effects on wildlife other than elk including endangered species, the lack of replacement standards for EHE, hiding cover, and thermal cover, the lack of independent scientific review to establish the best available science, the suspension of hiding cover and thermal cover standards, and the effect of relaxing road density standards on

aquatics and endangered bull trout (to be discussed under aquatics). We made clear our concerns for this issue in comments FOB et al 9 and 28, NEC et al 9-15, and FOC et al 35-37 and more. We object to the suspension of EHE, hiding cover, and thermal cover standards as stated in previous comments and would like to add the following information.

First, the DEA, Appendix D, and FEA state different levels of suspension of standards than the revised Appendix D. The Draft (pg 34) and Final EA (pg 35) state respectively, "The proposed project-specific variance from this standard is intended to allow six third order drainages in the project area to not meet elk habitat effectiveness standards" and "the proposed project-specific variance from this standard is intended to allow six third order drainages in the project area to not meet elk habitat effectiveness standards (emphasis added)." EA Appendix D (pg 2) states, "Purpose: To ensure there is adequate access in the project area, a project-specific variance from this standard is intended to allow six third order drainages in the analysis area to not meet EHE standards." However, the revised Appendix D (pg 2) states, "To ensure there is adequate access in the project area, a project-specific variance from this standard is intended to allow fourteen third order drainages in the analysis area to not meet EHE standards (emphasis added)." The DDN does not specify the number of drainages affected and only suspends the standard in general. Does that mean the DDN refers to all 28 drainages in the project area? It seems the FEA assesses only six. This brings into question conditions-based analysis where specifics come after the decision and also represents a bait and switch to the public between final comment period and the objection process.

The reasoning behind the suspension is, "The small size of the 3rd order drainages in the project area limits the amount of roads that can be present on the ground. To meet the standards, the mileage of roads needed to be closed would limit forest management access and conflict with other forest plan management objectives to provide roaded, dispersed recreation. (DDN Appendix B pg 16)." DDN (pg 25) states, "The Forest Plan says Lyon et al. (1983) should be applied to third order drainages. There are 385 third order drainages on the forest which range between 3 - 9,625 acres in size. Only 75 drainages (19%) are >3,000 acres. Lyon et al. 1983 says his standards should be applied to an area >3,000 acres." According to table 13 (Revised Wild Appendix B), only seven drainages in the project area less than 3000 acres are out of compliance and road decommissioning in one will bring it into forest plan compliance. That leaves six third order drainages <3000 acres out of compliance. The other seven drainages out of compliance are greater than 3000 acres as specified by Lyon et al. One of these drainages is 8 square miles (5120 acres) with 41 miles of open roads, another is just under 5120 acres with 33 miles of open roads. It seems Lyon et al 1983 would apply and road density reduction is warranted for elk, other wildlife and watershed health.

DDN pg 25 goes on to state, "The standard does not state what roads are to be considered: all roads, all publicly open roads, and/or only roads open during hunting season. Most recently, the Bitterroot NF has been using all roads open at any point during the year in the EHE calculation, maximizing the number of drainages that do not meet the standard." Roads affect elk when in use, so BNF is in line with objectives to consider roads open at any time of year. BNF also refuses to consider illegal road use and the subsequent road creation from consistent illegal off road use which is rampant on the forest. "Illegal road use is not a part of the proposed action and is thus not analyzed." (DDN Appendix B pg 17) We requested but BNF did not provide an analysis of how much further below the Forest Plan standards drainages would be if roads with ineffective road closures were considered open. Nor did they consider temporary road use after closure.

Finally, DDN pg 25 states, "The elk population in the Bitterroot has increased dramatically since the Forest Plan has been written despite non-compliance with this standard in 110 drainages (out of 386 drainages across the forest)." There is no analysis concerning the need for improved forage in the area and the Mud Creek project area is the most heavily roaded area on BNF. Half of its 28 drainages are out of EHE standard compliance. It is also the only EMU that has not met objectives for many years. The chart provided does not show a clear "continued upward trend" (DDN Appendix B pg 16) in elk population. Harvest is well below what it was years ago even after limited antlerless harvest was instituted in 2002. It seems to have leveled off to low numbers in 2010

and 2011 before the boundary change in 2014 and the limited antlered draw in 2012. Elk numbers in other EMU on BNF lands may be increasing, but this area does not show a long-term upward trend.

DROD pg 25 continues, "Elk habitat "effectiveness" is more related to forage abundance and quality than road density (Millspaugh et al. 2015, Ranglack et al. 2016, Crane et al. 2016). The Mud Creek Wildlife report (PF-WILD-001) provides more details on habitat effectiveness objectives." Not a single study mentioned by BNF shows reduced road densities to be harmful to elk. Wild 001 pg 40 states, "While some 3rd order drainages are not in compliance with EHE standards, recent research suggests that elk forage, summer range, and recreational pressures may have greater impacts to elk distribution than road density alone." This fails to recognize that roads increase recreation and human/elk encounters. Wisdom et al 2017 states, "Efforts to restore habitats without simultaneous efforts to reduce road density and control human disturbances will curtail the effectiveness of habitat restoration, or even contribute to its failure; this is because of the large number of species that are simultaneously affected by decline in habitat as well as by road-associated factors."

The FEA does not analyze the limitations of Cook et al 1998 nor explain why despite those limitations, it applies to elk on BNF lands. NEPA requires thorough analysis and BNF reliance on Cook et al falls short.

EHE, hiding cover and thermal cover standards are suspended without a clear replacement standard as required by NEPA. Again, BNF states the hardly evident "continued upward trend" as a reason to relax these standards and allow for openings up to 200 acres and to reduce cover through commercial logging in old growth stands traditionally left alone as well as thinning and prescribed burning in IRAs and WSAs. The Como project ROD from 8 years ago states that work on a forest wide amendment for hiding and thermal cover was in process. It seems the process is to remove the standard one project at a time.

The suspension of EHE, thermal, and hiding cover standards has been overused by BNF. BNF also uses high elk numbers on the entire forest to justify suspended standards (DDN pg 25). If these are indeed site-specific, then information used to justify them should be limited to the site.

Revised Wild 001 pg 34 states, "hiding cover analysis is difficult due to lack of available data that adequately describe understory conditions." There is an on the ground method for analyzing hiding cover. Just because it cannot be analyzed on a computer does not justify its extirpation. Wild 001 pg 36 explains, "All of these effects to winter range, both the short-term disturbances plus longer-term habitat changes, could all lead to minimal changes in winter distribution, causing the animals to shift to different areas, which could potentially include greater concentrations of elk on private lands in the valley bottom, where terrain is flatter and energetic costs may be less." This affects hunter opportunity, an objective of the forest plan. As there is an ongoing neighboring project where elk will be displaced and a proposed neighboring Hughes Creek project, where will the elk go? It continues, "Project activities may also have physiological effects on individual elk, reducing winter body conditions for animals, which could result in decreases in reproduction, herd health, or other factors. The magnitude of these effects from project activities are expected to be minimal." Since a need for forage improvement has not been justified in project documentation, it seems the project activities as well as suspension of standards would be ill advised in an EMU below objectives with low harvest numbers that triggered hunting limitations.

BNF has repeatedly stated in biological assessments that EHE standards protect a variety of wildlife. This umbrella effect of the standard is ignored in current analysis, see Gold Butterfly (Attachment M) and DLL2 (Attachment N) Biological Assessments for grizzly bear and lynx.

We don't agree with the BNF that the science considered in the Forest Plan is now obsolete. Lyon et al, 1985 recognize the importance of thermal cover. Christensen et al. (1993), a Region One publication on elk habitat effectiveness, emphasize "maintenance of security, landscape management of coniferous cover, and monitoring elk use[hellip]" Meeting a minimum of 70% elk use potential translates to about 0.75 miles/sq. mi. in key habitats,

as shown in their graph:

Also, "management of winter range to improve thermal cover and prevent harassment may be as

important as anything done to change forage quantity or quality." (Id.) Black et al. (1976) provide definitions of elk cover, including "Thermal cover is defined as a stand of coniferous trees 12 m (40 ft) or more tall, with average crown exceeding 70 percent. Such stands were most heavily used for thermal cover by radio-collared elk on a summer range study area in eastern Oregon (R.J. Pedersen, Oregon Department of Fish and Wildlife[mdash]personal communication)." Black et al. (1976) also state: Optimum size for thermal cover on summer and spring-fall range is 12 to 24 ha (30 to 60 acres). Areas less than 12 ha (30 acres) are below the size required to provide necessary internal stand conditions and to accommodate the herd behavior of elk. [hellip]Cover requirements on winter ranges must be considered separately and more carefully. Animals distributed over thousands of square miles in spring, summer and fall are forced by increasing snow depths at higher elevations to concentrate into much restricted, lower elevation areas in mid- to late-winter. Winter range, because of its scarcity and intensity of use, is more sensitive to land management decisions. Regarding Black et al. (1976) conclusions, Thomas et al., 1988a state, "We concur. New research on elk use of habitat on summer and winter ranges has become available, however (Leckenby 1984). Land-use planning requirements indicate that a model of elk winter-range habitat effectiveness is required." Please refer to attached and incorporated FOB scoping comments on the forest wide amendment to elk habitat objectives for more details on the science justifying the need for adherence to forest plan standards for EHE, hiding cover and thermal cover and the independent scientific review process (Attachment J).

Suggested Remedy:

Delay Mud Creek project decision until a forest wide programmatic amendment for EHE, thermal and hiding cover is completed with thorough, robust analysis as required by NEPA, and an independent scientific review as described in FOB EHE scoping comments.

Issue: Agency Ignores Court Directive Regarding Misuse of Site-specific Plan Amendments

FOB et al comments at 9 state, "Including this proposed amendment is simply an attempt to sidestep BNF Plan requirements. Any and all amendments to the Forest Plan should be performed individually." And at 45, "Ubiquitous Project Specific Forest Plan Amendments

The continuously expanding patchwork of various "project specific" amendments has not been subjected to any cumulative impacts analysis

One ongoing problem with project specific FP amendments is that sideline legal limitations are removed without replacement limitations. This leaves the field wide-open, even erasing the field itself.

Also, removal of Standards has direct environmental effects on resources that have been protected, however unintentionally, by those Standards. These effects are real and are directly related to the action of waiving the Standards. You are required to analyze and disclose such effects in proper NEPA documents.

This project includes project-specific amendments (elk habitat effectiveness [EHE], thermal, and hiding cover plus old-growth and coarse-woody debris) to the current Forest Plan. Project-specific amendments are intended to address unique characteristics of a particular area, not conditions common to an entire forest. In a situation

similar to the proposed Mud Creek project, a court held that a FS failure to explain how conditions within a project area supported a site-specific amendment over a forest-wide amendment. The court explained that a site-specific amendment "must be based on unusual or unique aspects of the site itself when compared to the forest generally." League of Wilderness Defenders, et. al. v. Connaughton, et al., plaintiffs challenged that the Snow Basin project area did not have distinguishing characteristics, and therefore, a site-specific amendment was not justified. No. 3:12-cv-02271-HZ (D. Or. Dec. 9 2014). The court agreed with the plaintiffs, holding the agency's decision to make site-specific amendments arbitrary and capricious because the Forest Service failed to explain what conditions within the project area supported selection of a site-specific amendment over a forest-wide amendment. Id. at 54-55.

The chart below shows the widespread use of these amendments throughout the forest. The chart does not include the old growth amendment that has been illegally used across the forest for over 26 years and is proposed for Gold Butterfly (50,000 acres) and the Bitterroot Front (150,000 acres) projects.

Suggested Remedy:

Delay Mud Creek project Decision until a programmatic forest-wide amendment for each individual proposed project specific amendment is completed with thorough analysis as required by NEPA and an independent scientific review to discern the best available science.

Issue: BNF has not fully disclosed direct, indirect, and cumulative effects of >40 acre openings on wildlife including endangered, sensitive, indicator species, aquatics and fisheries in violation of ESA, NFMA and NEPA. BNF did not provide clear instructions or adequate information concerning the 60 day comment period to the public.

Friends of the Bitterroot expressed our concerns about large openings (clearcuts) on wildlife.

DEA 102 states, "The vegetation treatments, transportation improvements, and watershed activities are likely to directly affect the pine marten and pileated woodpecker/" It goes on to say that treatment in old growth, coarse woody debris deficits, loss of snags, and large openings that violate the forest plan would displace martens and pileated woodpeckers and other species that select for complex habitat. The project is ongoing for 20 years and in concert with the Piquett Creek project. How will these animals find suitable habitat during project implementation and until areas are healed and what pressure will it put on all species in the project area? (FOB et al at 21)

And

Please analyze how large openings and uneven aged management will affect lynx travel and travel habitat throughout the year and especially during winter and early spring. Existing openings such as clearcuts not yet recovered are likely to be avoided by lynx in the winter. (Squires et al. 2010; Squires et al. 2006a) Squires et al. 2010 show that the average width of openings crossed by lynx in the winter was 383 feet, while the maximum width of crossed openings was 1240 feet. to avoid sparse, open forests and forest stands dominated by small-diameter trees during the winter. (FOB et al at 33)

The FEA tells us that "Aquatics Openings greater than 40 acres were considered in the ECA analyses (PF-AQUATICS-009, -025) and would be allowed as long as they do not cause overall watershed ECAs to exceed 20%. (FEA at 7) This is meant to protect water yield. However as stated in the aquatics and bull trout issue, this is not a firm threshold. Project documentation allows logging beyond this threshold with further design features and mitigations not fully analyzed in project documentation.

This is an inherent problem with conditions based analysis. We cannot know the full effects of project activities on

endangered and sensitive species without site specific information which is lacking in project documentation. Project documentation also makes it clear that there are no limits. Design features will be modified and new mitigation measures created to continue project activities even if they are detrimental to forest function and wildlife. This will all happen after the record of decision.

Project documentation recognizes that activities will affect indicator species. Indirect effects to pileated woodpeckers may occur in the form of habitat alterations. Treatments that reduce canopy cover below 10% or the loss of large snags and coarse wood may render areas temporarily unsuitable. Larger openings (greater than 40 acres) in stands affected by insect disturbance would reduce foraging habitat for pileated woodpeckers. Prescribed fire would provide additional feeding and nesting habitat by promoting large diameter, open stands and producing new snags, which would be beneficial. (FEA at 102-103). It also tells us that pine marten will be displaced "temporarily." The science shows more problematic effects:

The Mud Creek DEA fails to consider best available science for insuring viable populations of the pine marten, a species whose habitat is significantly altered by thinning and other active forest management. (See Moriarty et al., 2016; Bull and Blumton, 1999; Hargis et al., 1999 and Wasserman et al., 2012).

Moriarty et al., 2016 found that the odds of detecting a marten was 1,200 times less likely in openings and almost 100 times less likely in areas treated to reduce fuels, compared to structurally-complex forest stands.

Ruggiero et al. 1994b recognize that for martens, "trapper access is decreased, and de facto partial protection provided, by prohibitions of motorized travel." (FOB et al at 36)

We made it clear that "the DEA does not divulge how long the "temporary" effect will last nor does it take into consideration the effects of the CWD amendment across the project area to pileated woodpeckers. Please disclose the FS strategy and best available science for ensuring viable populations of pileated woodpeckers." (FOB et 39-40) We asked BNF to consider the Idaho Panhandles approach.

The Idaho Panhandle NF's Forest Plan's old-growth standards (USDA Forest Service, 1987c) were largely built around the habitat needs of its indicator species, the pileated woodpecker. Bull and Holthausen 1993, provide field tested management guidelines. They recommend that approximately 25% of the home range be old growth and 50% be mature forest.(FOB et al at 40-41)

Openings greater than 40 acres are in violation of forest plan standards:

The proposed excessive opening sizes for clearcuts violates the Bitterroot National Forest Plan standard that limits the maximum size of regeneration logging units to 40 acres. Under the National Forest Management Act, the Forest Service has a duty to ensure site-specific projects and authorizations comply with the Forest Plan. The proposed exceedances do not just go beyond the 40-acre limit from the Forest Plan standard. The Forest Service proposes openings that completely obliterate that limit and essentially render it meaningless by proposing 22 openings up to 200 acres. Standards, as compared to objectives or guidelines, are meant to be complied with. The Forest Service must explain this change by addressing why the reasoning for the Forest Plan Standard does not apply here. The EA does not provide any explanation for why the excessive size openings are necessary for this project. Without addressing the original basis for the Standard, the Forest Service's action lacks a rational basis and is arbitrary and capricious. Please explain the need for openings of up to 200 acres in size (FOB et al at 9).

DDN tells us that permission for these nebulously designated in size and location clearcuts will be approved before project decision with no specifics or site-specific information. If that is the case, what criteria is used to approve or deny these overly large clearcuts? Has Region 1 ever denied one? On what grounds? Planning >40 acre clearcuts with little to no information is in violation of the forest plan. According to a new study, they have not. The Clearcut Kings: The U.S. Forest Service Northern Region and its obsession with supersized clearcuts (Attachment O) finds that from January 2013 until March of 2021, the Forest Service's Northern Region approved 93,056 acres (roughly 145 square miles) of supersized clearcuts, an area about twice the size of the District of Columbia. To illustrate, a person with an average walking speed of three miles per hour would need two eight-hour days to traverse the perimeter of a contiguous square clearcut of that size. It also finds, "National-forest managers' requests to exceed NFMA limits contained little meaningful justification as to why supersized clearcuts were necessary (Bildeau and Juel 2021)"

Notice for the 60 day comment period for >40 acre openings is unclear. FOB et al at 8 states, "The DEA claims that public notice was given for openings over 40 acres in scoping. Scoping merely announced that there would be openings of over 40 acres. No more information was given. The DEA describes general locations and sizes from 40-200 acres, but these locations are currently inaccessible and will be until June. Please announce an official 60-day comment period for openings over 40 acres beginning when the area is accessible to the public so that they have the opportunity to assess the areas and submit substantive comments."

"As defined by this policy, seed tree, shelterwood, and clearcut even-aged silvicultural methods create harvest openings. Sixty-day public review is required for creation of openings greater than 40 acres (FSM 2470, section 2471.1, Region 1 supplement 2400-2016-1). The project scoping letter (PF-SCOPE-002) initially notified the public of the proposed creation of openings greater than 40 acres as part of the Mud Creek project." (DEA at 30) Scoping letter is dated September 6, 2019. At that time, the broadly defined focal areas and the admission that openings could be as large as 200 acres was not supplied. Announcing this comment period in the DEA implies the comment period was over.

FEA and DDN reset the comment period to March 21, 2021 with the publication of the DEA, "The public was notified through legal notice in the Ravalli Republic Newspaper on March 21, 2021 which included information about the required 60-day notice period initiation. (DDN at 4) At that time more information to the public was available but as noted above, DEA implies that the comment period had ended. The legal notice does not discuss the 60 day notice. It states that comments will be accepted for 30 days:

The U.S. Forest Service, Bitterroot National Forest has prepared a draft environmental assessment for the Mud Creek Project. The project is located on the West Fork Ranger District in the West Fork Bitterroot River-Rombo Creek watershed and portions of the Nez Perce Fork-Nelson Lake, Little West Fork, West Fork Bitterroot River-Lloyd Creek, Lower Blue Joint, and West Fork Bitterroot River-Painted Rocks Lake watersheds in the Bitterroot Mountain Range, southwest of Darby, Montana.

The purpose of the proposed action is to improve landscape resilience to disturbances, reduce potential fire severity, improve wildlife habitat, and design and implement a suitable transportation and trail system for long-term land management. To meet this purpose, the project proposes a suite of road and trail system changes and vegetation treatments, including regeneration harvests creating openings larger than 40 acres in some locations. The proposed action also involves project-specific plan amendments to forest plan direction for elk habitat effectiveness, elk thermal cover, old-growth, and coarse woody debris. The project will use a condition-based, phased approach to implementation. Throughout the implementation period, the public, tribes, and other stakeholders will have the opportunity to collaborate with the Forest Service on treatment identification and prioritization. Specific written comments on the proposed project will be accepted for 30 calendar days following publication of this notice in the Ravalli Republic. The publication date in the newspaper of record is the exclusive means for calculating the comment period. Federal regulations prohibit extending the length of the comment

period. During the public comment period, the Bitterroot National Forest will host an online public webinar to provide information on the proposal.

Conflicting with DDN, the FEA at 31 again states, "Sixty-day public review is required for creation of openings greater than 40 acres (FSM 2470, section 2471.1, Region 1 supplement 2400-2016-1). The project scoping letter (PF-SCOPE-002) initially notified the public of the proposed creation of openings greater than 40 acres as part of the Mud Creek project." Conflicting announcements of comment periods for openings >40 acres make it difficult for the public to understand when and how to comment on the openings in violation of NEPA. Even with the March 21 comment period, maps supplied of the focal areas were low resolution.

Though the provided FS maps of proposed roads and trails are readable, the maps made available to the public at FS offices and on the FS website depicting proposed commercial logging, WUI boundary, controlled burns, potential openings >40 acres, and the terraces map are not of sufficient scale, pixel/detail to be used in the field. The road numbers, creek names, and road locations are difficult or impossible to read. (FOB et al at 9)

And we would like to add:

A recent study by Atchley et al 2021, shows that large openings can affect wind entrainment speeding up localized and mean wind speeds resulting in "faster fire spread" (Atchley et al 2021 at 9). And "turbulent wind conditions in large openings resulted in a disproportional increase in TKE [Turbulence Kinetic Energy] and crosswinds that maintain fire line width (id at 9)". Certainly faster and wider fires threaten communities and firefighters.

In a forest service publication called "Living with Fire," it states that with 20mph winds and open forest will burn at 150 miles per hour while a dense conifer forest will burn at 15 acres per hour (https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev3_020876.pdf at 2 and 4) Another version of the same publication says that "dense conifer reproduction" the type that happens after a regeneration cut can burn at 650 acres per hour with 20 mph winds. (https://firesafemt.org/img/LivingwFireFSM20091.pdf).

It seems large openings and even thinning are not a wise idea in light of climate change and increasing fire seasons. Again, it does not protect communities or firefighters. It has the potential to make communities and wildland firefighters more vulnerable.

Openings allow the sun to dry out the forest floor and they encourage the growth of grasses and other fine fuels that encourage ignition and propel fires. Dry fuels and high winds make fires more intense and faster. In the US Department of Agriculture Handbook 360 "Fire Weather: A guide for the application of meteorological information to forest fire control operations" and found at https://digitalcommons.usu.edu/barkbeetles/14/ states on page 51 that "The two most important weather, or weather-related, elements affecting wildland fire behavior are wind and fuel moisture." On page 64 it warns that "Logs under a forest canopy remain more moist (approximately 25% more moist) through the season than those exposed to the sun and wind."

Fires, even severe ones, allow more carbon storage in the forest than thinning. Thinning and clearcutting removes carbon stores completely and use fossil fuels. In a stand on a Ward Mountain ridge that burned severely in 1984. Most of the trees were still standing and storing carbon. When they do fall, they will slowly release carbon over time versus an immediate loss of carbon stores caused by a large regeneration cut and thinning. These large openings include large, mature trees that store more carbon than smaller, younger trees. (Keith et al 2014)

Suggested Remedy:

Remove >40 acre clearcuts from the project and delay project decision until effects of project activities are fully

analyzed with site-specific analysis by abandoning conditions based analysis and separating the project into smaller, designated areas where thorough analysis is possible before ROD.

Issue: BNF fails to disclose direct, indirect, and cumulative effects concerning global warming. Forest Service is exacerbating climate change already on an extremely dangerous trajectory.

Previous concerns by objectors expressed in comments were not adequately addressed and carry over into this objection.

FOC et al Comments at 31 make it clear that BNF is not following final guidance by Department of Environmental Quality (DEQ) which 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 of greenhouse gases in the atmosphere are reasonably anticipated to endanger the public health and public welfare of current and future generations." It directs federal agencies to consider the extent to which a proposed action such as the Mud Creek timber sale would contribute to climate change. It rejects as inappropriate any notion that this timber sale is of too small a scale for such consideration:

Climate change results from the incremental addition of GHG emissions from millions of individual sources, which collectively have a large impact on a global scale. CEQ recognizes that the totality of climate change impacts is not attributable to any single action, but are exacerbated by a series of actions including actions taken pursuant to decisions of the Federal Government. Therefore, a statement that emissions from a proposed Federal action represent only a small fraction of global emissions is essentially a statement about the nature of the climate change challenge, and is not an appropriate basis for deciding whether or to what extent to consider climate change impacts under NEPA. Moreover, these comparisons are also not an appropriate method for characterizing the potential impacts associated with a proposed action and its alternatives and mitigations because this approach does not reveal anything beyond the nature of the climate change challenge itself: the fact that diverse individual sources of emissions each make a relatively small addition to global atmospheric GHG concentrations that collectively have a large impact.

The EA states "the Mud Creek project area is by far too small to measure global greenhouse gas emissions" yet in contradiction makes claims that the timber sale's effects would be net positive for global emissions.

The EPA has also rejected that same kind of analysis because cumulative effects would always dilute individual timber sale effects. (USDA Forest Service, 2016d at pp. 818-19).

FOB et al. at 18 states, "The FS's position on project impacts on climate change is that the project would have a miniscule impact on global carbon emissions. The problem with that viewpoint is, one can say the same thing about every source of carbon dioxide (and other anthropogenic greenhouse gas) emission on earth, and likewise justify inaction as does this DEA. In their comments on the Kootenai NF's Draft EIS for the Lower Yaak, O'Brien, Sheep project, the EPA rejected that sort of analysis, basically because the scale of analysis dilutes cumulative effects. We would add that, if the FS wants to refer to a wider scope to analyze its carbon footprint, we suggest that it actually conduct such a cumulative effect analysis and disclose it in a NEPA document."

The Forest Plan does not provide meaningful direction on climate change. Nor does the Mud Creek DEA acknowledge pertinent and highly relevant best available science on climate change. This project is in violation of NEPA. (FOB et al at 18)

The Mud Creek DEA does not analyze or disclose the body of science that implicates logging activities as a

contributor to reduced carbon stocks in forests and increases in greenhouse gas emissions. The DEA fails to provide estimates of the total amount of carbon dioxide (CO2) or other greenhouse gas emissions caused by FS management actions and policies[mdash]forest-wide, regionally, or nationally. (FOB et al at 18)

The best scientific information strongly suggests that management that involves removal of trees and other biomass increases atmospheric CO2. Unsurprisingly the Mud Creek DEA doesn't state that simple fact. The DEA fails to present any modeling of forest stands under different management scenarios. The FS should model the carbon flux over time for its proposed stand management scenarios and for the various types of vegetation cover found on the Bitterroot NF. (FOB et al at 19)

The project should include a thorough, in-depth analysis of its effects on the earth's climate. Management activities associated with this project will require large amounts of fossil fuel. Recent research 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, 2020). Any and all management activities which exacerbate climate change should be removed from the project unless they can be completely offset by including other activities which have been scientifically shown to mitigate global warming. (FOB et al at 19)

The response from the Forest Service is as follows:

The Forest Service recognizes that the forest plays a role in carbon storage that affects global climate change. Carbon stewardship is one of many aspects of multiple-use management in the project area. The proposed action is in line with the multi-agency Northern Rockies Adaptation Partnership's recommended strategies to manage for the unknowns associated with the future climate through efforts to increase diversity and landscape resilience to future disturbances.

The Forest Carbon Assessment for the Bitterroot National Forest (CLIMATE-003) was completed April, 2021 and added to the Mud Creek project file and analysis. The Forest Service has used several models to produce estimates of carbon stocks in vegetation and soil in the Bitterroot National Forest. These models are currently the best available scientific information regarding carbon dynamics on the forest. The empirical data used to produce modeled estimates of carbon stocks and the effects of disturbances on carbon stocks are based on data from Forest Inventory and Analysis surveys.

The analysis was completed at the Regional scale and narrowed down to the Bitterroot National Forest scale, the smallest scale to which carbon cycling, emissions, and storage can reasonably be analyzed based on model resolution and available data. Model results are unavailable at the Mud Creek project scale.

The Forest Carbon Assessment found that wildfire is the greatest source of carbon storage reduction on the Bitterroot National Forest, having affected approximately 5% of the baseline inventory of forest-wide carbon stocks between 1990 and 2011, followed by root disease decay and mortality (<2% of baseline carbon stocks), insect-related mortality (<1%), and finally, timber harvest (<1%). In the near term, the proposed action might contribute a small amount of change in the carbon balance however, carbon sequestration is cyclic in forests and carbon storage again increases as thinned stands increase in health and vigor, begin to grow, and new young stands establish. The Forest Service recognizes greenhouse gas (GHG) emissions tied to mechanical treatments and log haul however, carbon continues to be stored in wood products. Data is currently unavailable to analyze greenhouse gas emissions from harvest operations and other business operations at the project scale.

Please see chapter 3 of the Final Environmental assessment and the Forest Vegetation/Silviculture Report (PF-SILV-001) for detailed information on the Existing Condition of the Climate and Carbon (page 19) and the Effects of Treatment Activities on Climate and Carbon (page 50). PF-CLIMATE-001 and PFCLIMATE-003 provide

further detail about the information used to describe the existing condition of carbon stocks. (Draft DN Appendix B, page 23)

Further discussion:

The earth's climate is warming substantially. Recent research indicates that, no matter what mitigation actions are initiated, human activity has already increased greenhouse gas enough to warm the planet by at least 2 - 2.5 degrees Celsius (3.6 - 4.5 Fahrenheit). Nowhere in the Mud Creek Project Draft EA documentation, is there an indication that the IDT has performed more than cursory research into the impact a much warmer climate will have on the BNF. That is particularly disturbing given recent research which clearly shows that the total greenhouse gas emissions from logging is at least three times the levels produced during an average wildfire season. (Oregon Department of Energy, 2018 Biennial Energy Report, 2018) (Harris, 2016).

It seems that the stated PN of the Mud Creek Project is not based upon the most recent scientific research and studies. Rather, it appears the PN is based upon a politically motivated desire for an increase in logging activities. This Agency's continual use of the same PN for projects is misleading. Worse, executing the proposed activities contained in this project not only contribute to global warming and harm existing ecological stability but drastically reduce the capacity of the BNF to reestablish the resilience needed to cope with scientifically projected future conditions. (Baker W. L., 2018) (Buotte, 2019) (McNulty, 2014).

The FS response includes "The proposed action is in line with the multi-agency, Northern Rockies Adaptation Partnership's recommended strategies[hellip] ." The Northern Rockies Adaption Partnership's goal is explained as:

"The Northern Rockies Adaptation Partnership is a science-management collaboration with the goal of assessing the vulnerability of natural resources and ecosystem services to climate change and developing science-based adaptation strategies." (https://www.fs.usda.gov/pnw/projects/northern-rockies-adaptation-partnership-preparing-climate-change-through-science-management)

That goal is reactive not proactive. It is a plan to assess vulnerability to the effects of climate change that does nothing to assess what can be done to limit contributions to global warming. That is not only defeatist, but it also shirks each Agency's responsibility to reduce or minimize management actions that continue to contribute to global warming.

"The future carbon balance in the boreal forest will largely depend on the type and frequency of disturbances, changes in species composition, and alterations to the nutrient and moisture regimes under changing climate conditions. It will also depend on forest management practices that affect both the disturbance regime and nutrient status." (Bhatti, 2003)

"Biodiversity metrics also need to be included when selecting preserves to ensure species-rich habitats that result from frequent disturbance regimes are not overlooked. The future impacts of climate change, and related pressures as human population exponentially expands, make it essential to evaluate conservation and management options on multi-decadal timescales, with the shared goals of mitigating committed CO2 emissions, reducing future emissions, and preserving plant and animal diversity to limit ecosystem transformation and permanent losses of species." (Buotte, 2019)

"Increasing cumulative carbon in forests is essential for keeping carbon dioxide out of the atmosphere. It has been found world-wide that forests hold half of the carbon in the largest 1% diameter trees (Lutz et al, 2018), and can store twice the carbon they do now (Erb et al. 2018). Increasing forest reserves and allowing forests to meet their ecological carbon storage potential (proforestation) are the most effective climate mitigation strategies (Law et al. 2018; Moomaw et al 2019). Letting forests grow and halting land conversions would bring carbon dioxide

removal rates closer to current emission rates globally (Houghton and Nassikas, 2018)."

"Increased harvesting of forests does not provide climate change mitigation.

"Context of forest carbon emission sources - Harvest is the major source of forest emissions in the US. Across the lower 48 states, direct harvest-related emissions are 7.6 times higher than all-natural disturbances (e.g., fire, insects) combined (Harris et al. 2016). In the West Coast states (OR, CA, WA), harvest-related emissions average 5 times fire emissions for the three states combined (Hudiburg et al. 2019).

"There is absolutely no evidence that thinning forests increases biomass stored (Zhou et al. 2013). It takes decades to centuries for carbon to accumulate in forest vegetation and soils (Sun et al. 2004, Hudiburg et al. 2009, Schlesinger 2018), and it takes decades to centuries for dead wood to decompose.

"The current system where most forestlands are available for logging keeps too many trees at a smaller size that do not store much carbon. Providing incentives to lengthen rotation harvest cycles will increase carbon storage in production forests, and reduce atmospheric carbon dioxide." (Law B. E., The Status of Science on Forest Carbon Management to Mitigate Climate Change, 2020)

"The most favorable management regime for carbon storage/sequestration was "set-aside" followed by long rotation lengths and avoiding silvicultural thinning. These recommended management regimes are largely the same as those that have been promoted to maintain biodiversity in production forest landscapes (e.g., M[ouml]nkk[ouml]nen etal.,2014,2011)." (Trivi[ntilde]o, 2015)

"Carbon stock losses associated with logging represent a much greater departure from natural disturbance in resprouting forests, because wildfire causes relatively little carbon loss in resprouting forests compared to non-resprouting forests. This analysis highlights the need to consider specific biological responses when assessing forest carbon stock losses associated with disturbance. Consideration of these dynamics is essential in addressing carbon stock risk mitigation." (Wilson, 2020)

The Forest Carbon Assessment, only recently made available to the public, makes multiple assumptions based on modeling. Results from modeling are dependent upon the correctness of the data which makes such results uncertain and never as reliable as data collected from on-the-ground research. In addition, long-held Agency assumptions related to carbon sequestration are questioned by recent research. (Buotte, 2019)

"After outlining these assumptions, we conclude suggesting that many studies assessing forest management or products for climate change mitigation depend on a suite of assumptions that the literature either does not support or only partially supports." (Howard, 2021)

"We find that Western US forests are net sinks because there is a positive net balance of forest carbon uptake exceeding losses due to harvesting, wood product use, and combustion by wildfire. However, over 100 years of wood product usage is reducing the potential annual sink by an average of 21%, suggesting forest carbon storage can become more effective in climate mitigation through reduction in harvest, longer rotations, or more efficient wood product usage." (Hudiburg, 2019)

Declarations from the Forest Carbon Assessment include:

"[hellip] 47.6% of the forest carbon stocks in the BNF are stored in the soil carbon contained in the organic material to a depth of one meter (excluding roots) and the forest floor. The aboveground portion of live trees, which includes all live woody vegetation at least one inch in diameter, is the second largest carbon pool, storing another 30.5 percent of the forest carbon stocks." (CLIMATE-003, page 5)

The proposed management actions for this project will impact both above- and below-ground carbon stores. Thinning and logging will remove most of the above-ground carbon from the forest. (Smith, 2019). Those same actions together with road work will negatively impact below-ground carbon storage. Therefore, those management actions negatively affect the forest's ability to sequester carbon. That is unacceptable.

"Deforestation and forest degradation (thinning) are the second largest source of anthropogenic GHG emissions.

"Thinning forests to reduce potential carbon losses due to wildfire is in direct conflict with carbon sequestration goals, and, if implemented, would result in a net emission of CO2 to the atmosphere because the amount of carbon removed to change fire behavior is often far larger than that saved by changing fire behavior, and more area has to be harvested than will ultimately burn over the period of effectiveness of the thinning treatment." (Law B. E., 2011)

"[hellip] , we find that thinning existing forests to reduce crown-fire risk increases net carbon emissions to the atmosphere for many decades, [hellip] ." (Law B. E., 2014)

The Forest Carbon Assessment goes on to state:

"[hellip], the trend of relatively steady carbon stocks from 1990 to 2013 (Fig. 1) over the 23-year period suggests that the Bitterroot NF is neither a carbon source nor a carbon sink. Carbon stocks have been relatively stable over the 23-year period." (CLIMATE-003, page 6)

The document insinuates that such a trend is acceptable. It does not mention that the forest could sequester additional carbon. No mention is made of the negative impact on carbon storage by current management actions.

"When the loss of carbon associated with wood products manufacturing is factored in, it is highly unlikely that harvesting carbon and placing it into wood products will increase carbon stores in the overall forest sector.

"Carbon is always lost as wood products are used or disposed, which means release of CO2 to the atmosphere. Since long-term storage in forest products saturates over time (i.e., eventually does not increase), the effect of substituting wood for fossil fuel energy also saturates.

"Managing forest carbon should consider other ecosystem values and services, and ecosystem sustainability in the face of climate change, allowing for natural adaptation to climate change (e.g., landscape connectivity for migration and minimizing impacts of management on species ability to survive in a new climate)." (Law B. E., 2011)

"Harvest residue bioenergy use did not reduce short-term emissions.

"Utilizing harvest residues for bioenergy production instead of leaving them in forests to decompose increased emissions in the short-term (50 y), reducing mitigation effectiveness. Increasing forest carbon on public lands reduced emissions compared with storage in wood products because the residence time is more than twice that of wood products." (Law B. E., Land use strategies to mitigate climate change in carbon dense temperate forests, 2018)

The Forest Carbon Assessment asserts:

"Most national forests in the Northern Region have experienced increasing carbon densities from 1990 to 2013. Carbon density in the Bitterroot NF has been similar but slightly lower than the average for all national forest units in the Northern Region (Fig.4)." (CLIMATE-003, page 7)

What Figure 4 actually shows is, while most forest in the Northern Region experienced increasing carbon densities, the BNF experienced decreasing densities. Although no explanation is offered for those trends, the document states "All results reported in this assessment are estimates that are contingent on models, data inputs, assumptions, and uncertainties." That is an explicit admission that the claimed results are suspect.

The Forest Carbon Assessment alleges:

"Although harvest transfers carbon out of the forest ecosystem, most of that carbon is not lost or emitted directly to the atmosphere. Rather, it can be stored in wood products for a variable duration depending on the commodity produced. Wood products can be used in place of other more emission intensive materials, like steel or concrete, and wood-based energy can displace fossil 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 recovered with time as the affected area regrows." (CLIMATE-003, page 8)

Proclamations such as those are misleading. Recent research indicates the timber industry and the Forest Service has been grossly overestimating the amount of carbon stored in wood products. The Forest Carbon Assessment even agrees, stating "As with the baseline estimates of ecosystem carbon storage, the analysis of carbon storage in Harvested Wood Products (HWP) also contains uncertainties." (CLIMATE-003, page 9)

The Forest Carbon Assessment contends:

"Fire on the Bitterroot NF was the primary disturbance influencing carbon stocks from 1990 to 2011[hellip] ." (CLIMATE-003, page 12)

There is disagreement among scientists concerning which disturbance has the greatest impact on forest carbon sequestration. Numerous researchers found that, on an annual basis, logging emits significantly more atmospheric carbon than wildfires. (Harris, 2016) (Hicke, 2013) (Howard, 2021) (Smith, 2019) (Wilson, 2020) (Stenzel, 2019) (Law B. E., Land use strategies to mitigate climate change in carbon dense temperate forests, 2018) (See also Appendix A)

The Forest Carbon Assessment maintains:

"The rate of carbon uptake and sequestration generally decline as forests age." (CLIMATE-003, page 22)

There is a considerable amount of controversy in the scientific community about that claim. The Forest Carbon Assessment did not include on-the-ground evidence to support that statement and there is a substantial amount of research that refutes it.

"Large-diameter trees store disproportionally massive amounts of carbon and are a major driver of carbon cycle dynamics in forests worldwide. In the temperate forests of the western United States, proposed changes to Forest Plans would significantly weaken protections for a large 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.

"We analyzed forest inventory data collected on 3,335 plots and found that large trees play a major role in the accumulated carbon stock of these forests. Tree AGC (kg) increases sharply with tree diameter at breast height (DBH; cm) among five dominant tree species. Large trees accounted for 2.0 to 3.7% of all stems (DBH 1" or 2.54 cm) among five tree species; but held 33 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 but stored 42% of the total AGC.

"Given the urgency of keeping additional carbon out of the atmosphere and continuing carbon accumulation from the atmosphere to protect the climate system, it would be prudent to continue protecting ecosystems with large trees for their carbon stores, 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 large carbon stock that would be lost and the resulting climate consequences if these large trees are harvested.

"Proforestation allows existing forests to continue growing without harvest or other management practices so that more trees can reach the large tree size that accumulates more carbon in the near and long term than do reforestation and afforestation (Moomaw et al., 2019).

"In fire-prone forests such as in our study area, a diameter limit strikes the balance between protecting the most fire-resistant trees that store the most carbon and allowing fuels reduction with reintroduction of fire in dry biophysical environments. Intact mesic forests are ideal locations for proforestation. Harvesting large trees will add very large amounts of biogenic carbon to the atmosphere (Harris et al., 2016), [hellip] .

"The young trees will never be able to recover and accumulate the amount of carbon that is in the growing and older forests during these next critical decades, and will only equal current levels a century or more from now.

"Protecting large trees to help stabilize climate is critically important for managing forest ecosystems as social-ecological systems." (Mildrexler, 2020)

"[hellip], large, old trees do not act simply as senescent carbon reservoirs but actively fix large amounts of carbon compared to smaller trees; at the extreme, a single big tree can add the same amount of carbon to the forest within a year as is contained in an entire mid-sized tree. The apparent paradoxes of individual tree growth increasing with tree size despite declining leaf-level and stand-level productivity can be explained, respectively, by increases in a tree's total leaf area that outpace declines in productivity per unit of leaf area and, among other factors, age-related reductions in population density. Our results resolve conflicting assumptions about the nature of tree growth, inform efforts to understand and model forest carbon dynamics, and have additional implications for theories of resource allocation and plant senescence." (Stephenson, 2014)

The Agency assertion that the forest must be managed (e.g., thinned and logged) to increase resilience to future disturbance and improve carbon storage is also repudiated. (Law B. E., 2021)

"Compared with other terrestrial ecosystems, forests store some of the largest quantities of carbon per surface area of land." Much of the carbon stored is within the soils, with a smaller part 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 carbon which is not the case for soils in unharvested forests. Not only does it lose the carbon stored in the soils, but cutting trees eliminates the trees' potential to continue to sequester carbon." (Achat, 2015)

"Our study showed that, compared with conventional stem-only harvest, removing the stem plus the harvesting residues generally increases nutrient outputs thereby leading to reduced amounts of total and available nutrients in soils and soil acidification, particularly when foliage is harvested along with the branches. Losses of available nutrients in soils could also be explained by reduced microbial activity and mineralization fluxes, which in turn, may be affected by changes in organic matter quality and environmental conditions (soil compaction, temperature, and moisture). Soil fertility losses were shown to have consequences for the subsequent forest ecosystem: tree growth was reduced by 3-7% in the short or medium term (up to 33 years after harvest) 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 on soil properties and trees that may have an impact on the functioning of forest ecosystems." (Achat, 2015)

The FS is purposefully ignoring the amount of Greenhouse Gasses emitted during management actions, especially logging and thinning.

"We found that emissions have been underestimated by up to 55% in Oregon and 25% in Washington, and that at present, these emissions are not reported in state GHG reporting guidelines." (Hudiburg, 2019)

Issued on August 1, 2016, this directive from the Executive Office of the President, Council on Environmental Quality has been reimplemented as national direction. [See 86 Fed Reg. 10252 (Feb. 19, 2021).]

2016 CEQ guidance acknowledges, "changes in our climate caused by elevated concentrations of greenhouse gases in the atmosphere are reasonably anticipated to endanger the public health and public welfare of current and future generations." It directs federal agencies to consider the extent to which a proposed action such as this Mud Creek project would contribute to climate change. It rejects as inappropriate any notion that this project is of too small a scale for such consideration:

"Climate change results from the incremental addition of GHG emissions from millions of individual sources, which collectively have a large impact on a global scale. CEQ recognizes that the totality of climate change impacts is not attributable to any single action, but is exacerbated by a series of actions including actions taken pursuant to decisions of the Federal Government. Therefore, a statement that emissions from a proposed Federal action represent only a small fraction of global emissions is essentially a statement about the nature of the climate change challenge, and is not an appropriate basis for deciding whether or to what extent to consider climate change impacts under NEPA. Moreover, these comparisons are also not an appropriate method for characterizing the potential impacts associated with a proposed action and its alternatives and mitigations because this approach does not reveal anything beyond the nature of the climate change challenge itself: the fact that diverse individual sources of emissions each make a relatively small addition to global atmospheric GHG concentrations that collectively have a large impact." Fed Reg. 10252 (Feb. 19, 2021)

The FS must quantify GHG emissions. The agency can only use a qualitative method if tools, methodologies, or data inputs are not reasonably available. If that is the case, there needs to be rationale as to why a quantitative analysis is not warranted. However, quantitative tools are readily available, so the FS must comply.

FS response to comments include:

"The Forest Service recognizes greenhouse gas (GHG) emissions tied to mechanical treatments and log haul however, carbon continues to be stored in wood products. Data is currently unavailable to analyze greenhouse gas emissions from harvest operations and other business operations at the project scale." (Draft DN Appendix B, page 23)

Declaring that "carbon continues to be stored in wood products" infers that a large amount of carbon is stored. Nothing could be further from the truth. Only 15% of the carbon in a living tree is estimated to remain stored in "wood products." (see Appendix A). And the Agency ignores the amount of carbon and greenhouse gases discharged into the atmosphere during the multiple processes required to extract wood products from trees by declaring "Data is currently unavailable to analyze greenhouse gas emissions from harvest operations and other business operations at the project scale."

The FS employs a significant number of scientists who have long understood the Agency's management actions contribute to global warming. For FS management to continue the pretense that "data is not available" is dangerous, and detrimental to the longevity of both the Agency and humanity. People in every level of

government in multiple nations acted as if such assertions were acceptable or politically expedient. That is what has allowed global warming to reach the crisis stage. The just-released IPCC 2021 report stresses that "business as usual" is not only unacceptable, but wrong, and lethal. (Change, 2021)

By refusing to acknowledge that management actions contribute to global warming, the Agency continues "future discounting," Minimizing a value received in the future (e.g., 1, 10, or even 100 years from now) to a value received immediately. This is dangerous not only to forest resources but to humans as well.

Suggested Remedies:

The BNF must discontinue management actions with the potential to reduce the forest's ability to sequester carbon.

No management actions should be performed that increase greenhouse gas emissions.

To maximize carbon sequestration, no mature or over mature trees should be removed from the forest.

Under an independent scientific review, analyze the following:

? The assumption that fire rather than management actions (logging/thinning) is the primary contributor to carbon emissions.

? The assumption that large amounts of carbon are sequestered in wood products for the long term.

? The assertion that, on an annual basis, old trees (called mature and over-mature trees by silviculturists) store less carbon than young trees.

Issue: BNF fails to fully disclose or analyze cumulative effects

FOB et al at 17 state, "The Draft EA documentation dealing with the cumulative impact of this, previous, and foreseeable future projects is inadequate. Given the current climate crisis and the President's Executive Order (Tackling the Climate Crisis at Home and Abroad) to all federal agencies to enact climate-smart policies, this oversight is dangerous."

FOC et al AT 15 discuss effects on wildlife. "The FS has failed to properly analyze and consider that forests, especially old growth, exhibit natural resiliency to wildland fire and climate change, provide climate refugia for associated wildlife and other organisms, and are significant stores of above-ground and below-ground carbon stores that would be harmed by logging. DeLuca, 2009 states, "Old growth forests, having survived the fires, droughts, and insect and disease outbreaks of the past, have shown themselves to be resilient elements of the forest ecosystem. The diversity of species and tree sizes in old-growth forests makes them inherently resistant to dramatic change."

The forest Service responded as follows:

The wildlife section of the draft EA and the Wildlife Effects Analysis Report (PF-WILD-001) evaluated the environmental consequences of the proposed action on wildlife species and their habitats, including cumulative effects. All the wildlife species analyzed in the project area are not endemic to the project area, the West Fork Ranger District, or the Bitterroot National Forest.

The Wildlife Effects Analysis Report (PF-WILD-001, pp. 5-7) documented the scope of analysis and the analysis methodology, and discloses the assumptions made during effects analysis. Information sources and statements

regarding incomplete or unavailable information contain reference to "professional judgement." The imprecise nature of modeled data and limits of available scientific data are also addressed. For species requiring further information due to a lack of available data or questionable model outputs, the Design Features (draft EA, Appendix A) and Implementation Process (draft EA, Appendix B) serve as additional constraints on project implementation, as well as required during and post implementation monitoring. The Design Features contain constraints on management activities based on the proposed activity. The Implementation Process requires all areas proposed for treatment to have wildlife surveys completed before any action is implemented (draft EA, Appendix B, pp. 24-25).

Cumulative effects and population viability are addressed for each species analyzed, including the appropriate applicable scale to each species. Some species cumulative effects were addressed at the project-area level, while other wider-ranging species were addressed at larger scales. One commenter references Schultz (2010, 2012), which discuss issues pertinent to the scale of cumulative effects analysis for wildlife and the limited availability of scientific information and monitoring data to inform analysis of the specific effects of past human activity on animal populations in the project area. The cumulative effects analysis takes into account effects of past, future, and ongoing activities using the best available scientific information. (Draft DN Appendix B, pages 38, 39)

The above response indicates the FS assumed we are only concerned how the project management activities will cumulatively affect wildlife. That is not true.

Cumulative effects of the proposed management activities will affect far more than local wildlife species. Also affected will be an uncountable number of complex, interconnected ecosystems, the disruption of which will ultimately have an effect on humans.

So far, the Agency has done little more than pay lip service to the cumulative effects of management actions associated with projects. That must change.

Suggested Remedy:

The FS must withdraw this project until a thorough, science-based analysis of the cumulative effect of management actions related to this and all other past, present, and anticipated future projects is completed.

FOREST PLAN COMPLIANCE

FOB and other commenters have addressed a lack of NFMA compliance throughout comments and we have again addressed violations to NFMA in this objection on issues such as the project amendments, design features, wildlife habitat, and more. In the old growth section we address the lack of compliance with snag retention standards.

We also address forest plan compliance in the roads section. The FS has been, and under this project would continue to manage the project area inconsistent with Forest Plan Road System Standards, in violation of NFMA. These include:

? Roads will be maintained to design standards. And

? Roads will be closed to public use if adequate road maintenance funds are not available.

The FS has been and under this project would continue to violate the following standards:

? BNF has been violating the forest plan for the past 26 years concerning old growth standards and definition.

? In past projects and this current project, BNF has shown little to no attempt to bring the forest into compliance with management area standards for percentages of old growth.

? In past projects and this current project, BNF has not shown any attempt to bring the forest into compliance with EHE standards. Darby Lumber Lands Project documentation promised to bring the area into EHE standards with Darby Lumber Lands Phase 2, however the EHE standard was again suspended for Phase 2.

Issue: Commercial logging in RHCAs violates Forest Plan direction for fish.

FOC et al at 27, " The EA fails to demonstrate consistency with Forest Plan direction for fish, riparian areas, and water quality and quantity. "

FEA states there are 19 acres in protected RHCAs "suitable" for commercial logging. This is in violation of direction in the INFISH Forest Plan Amendment from 1995.

FEA at 22, "Three site specific treatment areas in riparian habitat conservation areas, totaling approximately 19 acres, will be analyzed where treatment may improve riparian management objectives in accordance with the Inland Native Fish Strategy (as amended into the 1987 Bitterroot Forest Plan). The areas are described in detail in Appendix A of PF-AQUATICS-001, which includes a site-specific watershed analysis describing the three areas and the rationale for treatment to improve riparian management objectives."

Aquatics 001 Appendix A at 11 describes allowing commercial treatment within 300 feet of Nez Perce Creek, critical bull trout habitat and an sediment impaired stream. How is this in line with INFISH? Allowing machines close to the river to "improve" an area is not supported by any evidence and it will be dodgy at best to mechanically harvest on terraces within 200 feet of the river. "Tractor yarding will happen during winter when adequate ground conditions are present." Tractor yarding is proposed within 150 of the creek. BNF has not been reliable at adhering to adequate conditions as we saw with DLL2 (Attachment E). The same yarding conditions near the creeks are proposed for area 2 and area 3. Area 3 is near the West Fork of the Bitterroot River, bull trout critical habitat. This area has lots of standing dead trees. Fallen logs improve river habitat and trout spawning areas. If these riparian areas are degraded, what is causing the degradation? It is not the lack of logging. The logging of these areas is not justified.

Suggested Remedy:

Remove any mechanical activities from RHCAs on the project. Look for the source of riparian habitat objective failure and find less invasive means to improve.

Issue: BNF fails to comply with forest plan by not fully disclosing and analyzing the direct, indirect, and cumulative effects of project activities and amendments on indicator species.

FOB et al at 35 state, "Please use the best available science to explain how the high density of roads in the area and increasing those roads during project implementation of 20 years will affect all Endangered, Sensitive species and management indicator species.

And at 35-36 "The Mud Creek DEA fails to consider best available science for insuring viable populations of the pine marten, a species whose habitat is significantly altered by thinning and other active forest management. (See Moriarty et al., 2016; Bull and Blumton, 1999; Hargis et al., 1999 and Wasserman et al., 2012).

Moriarty et al., 2016 found that the odds of detecting a marten was 1,200 times less likely in openings and almost 100 times less likely in areas treated to reduce fuels, compared to structurally-complex forest stands.

Ruggiero et al. 1994b recognize that for martens, "trapper access is decreased, and de facto partial protection provided, by prohibitions of motorized travel."

Old growth is essential to martens. Please disclose analysis using the best available science how using only tree numbers in Green et al will affect marten habitat. The DEA does not disclose the quantity and quality of habitat necessary to sustain the viability of the marten.

BNF offered no more analysis on these issues.

BNF admits to project activities affecting pileated woodpeckers.

Indirect effects to pileated woodpeckers may occur in the form of habitat alterations. Treatments that reduce canopy cover below 10% or the loss of large snags and coarse wood may render areas temporarily unsuitable. Larger openings (greater than 40 acres) in stands affected by insect disturbance would reduce foraging habitat for pileated woodpeckers. Prescribed fire would provide additional feeding and nesting habitat by promoting large diameter, open stands and producing new snags, which would be beneficial. (DEA at 102-103)

The FEA does not divulge how long the "temporary" effect will last nor does it take into consideration the effects of the CWD amendment or the canopy closure change with old growth amendment across the project area to pileated woodpeckers.

The Idaho Panhandle NF's Forest Plan's old-growth standards (USDA Forest Service, 1987c) were largely built around the habitat needs of its indicator species, the pileated woodpecker. Bull and Holthausen 1993, provide field tested management guidelines. They recommend that approximately 25% of the home range be old growth and 50% be mature forest.

USDA Forest Service, 1990 indicates measurements of the following variables are necessary to determine quality and suitability of pileated woodpecker habitat:

? Canopy cover in nesting stands

? Canopy cover in feeding stands

? Average diameter of potential feeding sites.

? Number of potential nesting trees >20" dbh per acre

? Number of potential nesting trees >30" dbh per acre

? Average DBH of potential nest trees larger than 20" dbh

? Number of potential feeding sites per acre

The pileated woodpecker's strong preference for trees of rather large diameter is not adequately considered in the Forest Plan or DEA. The FS provides absolutely no commitments for leaving specific numbers and sizes of largest trees favored by so many wildlife species.

Forest Service did not offer further analysis of effects of project activities on indicator species including the old growth amendment.. Forest plan standards require, "The amount and dlstrlbutlon of old growth will be used to ensure sufficient habitat for the maintenance of viable populations of existing native and desirable non-native vertebrate species, Including two Indicator species, the pine marten and pileated woodpecker.

Suggested Remedy:

Follow the forest plan and fully disclose and mitigate effects of project activities and amendments on indicator species.

Issue: Misinterpretation of forest plan standard intent and failure to disclose and analyze the direct, indirect, and cumulative effects.

We would like to add our concerns about forest plan interpretation as expressed in DDN Appendix B at 27.

"We would like the Forest Service to shift their methods for protecting resources from that of firm prescriptive restrictions to one that focuses on descriptive end-results; in other words, describe what you would like the end result to be rather than prescribing how to get there. There are a variety of operators that work in the Bitterroot market area with a variety of skills and equipment. Developing an EA and contract that firmly describes how any

given unit shall be logged may inherently limit the abilities of certain operators.

Response: The designation by description and designation by prescription methods of timber designation will be considered during the implementation process. The Bitterroot National Forest is bound to national and regional contractual standards, along with forest plan standards, that are beyond the influence of the Mud Creek project environmental assessment. The Bitterroot forest plan does not prohibit using ground-based equipment on steep slopes for non-yarding purposes (U.S. Department of Agriculture 1987), p. III-5."

Designation by prescription has not been analyzed in project documentation and should not be considered in the implementation process. The forest plan continuously limits contractors based on habitat, water and soil conditions among others. This does not follow BNF assessments and monitoring results. FEA at 89 states, "Previous Forest Plan Monitoring shows that DSD in the project area has been limited to less than 15% when standard design features, such as operating on dry soils and limiting harvest to less than 35% slope are used (PF-SOILS-006)." This has been omitted from the Final EA and is not mentioned in the DDN..

Finally, this does not follow the forest plan intent to protect soil during logging operations. The standard prohibits machinery for yarding operations on steep slopes. In 1987, feller bunchers were in their infancy. At the time, few could have predicted their future capabilities. It is true that they can harvest on steep slopes, but should they? The forest plan intent is quite clear. In order to protect soils and water quality, machinery should not be used on steep slopes. The response above does not take into account the intent of the plan. Furthermore: there are state mandates concerning soils and water quality on machinery on steep slopes.

Suggested Remedy:

Stick to strict prescriptive descriptions for timber harvest and prevent the use of machinery on steep slopes as intended by the forest plan.

Issue: Desired conditions and design features on which the project proposal relies are not a part of the Forest Plan.

FOC et al at 5 makes it clear that project assumptions are not a part of the forest plan nor have they been vetted through NEPA or NFMA processes. "The EA makes a big deal about the proposed activities supposedly achieving or moving toward vegetation-related "Desired Conditions" as drivers of the proposal, yet where the FS gets these desired conditions is unclear. The Forest Plan has practically no Desired Conditions resembling those of the EA. The Forest Plan FEIS does not evaluate a scenario of achieving any of the EA's vaguely described desired conditions. The CBIA Plan's "desired conditions" are not in accord with Forest Plan, having been adopted outside of legitimate NEPA and NFMA processes."

FS does not respond to this in DDN.

Suggested Remedy:

Delay the project until the creation of desired conditions are a part of the forest planning and full NEPA process.

Issue: Replacement standard for old growth does not comply with forest plan standard #3. BNF fails to fully disclose and analyze the direct, indirect and cumulative effects of suspension of this standard.

Green et al creates minimum snag thresholds which does not comply with forest plan standard #3, "All snags that do not present an unacceptable safety risk will be retained." II-20

Suggested remedy:

Delay project decision until a forest wide forest plan amendment for old growth and a replacement standard can be created that does not conflict with the forest plan. Forest wide amendment should include an independent scientific review and measurable, clear standards.

Issue: BNF does not fully disclose or analyze the direct, indirect, and cumulative effects of project activities on soil or propose thorough soil analysis prior to project activities.

The lack of qualified and thorough soil analysis prior to management activity violates forest plan goals to "maintain soil productivity, water quality, and water quantity.II=3" and to "design management activities to maintain soil productivity. II-6"

Project does not comply with forest plan standards for Water and Soil:

? Soil and Water Conservation Practices will be a part of project design and implementation to ensure soil and water resource protection (FSH 2509.22).

? Plan and conduct land management activities so that reductions of soil productivity potential caused by detrimental compaction, displacement, puddling, and severe burning are minimized.

? Plan and conduct land management activities so that soil loss, accelerated surface erosion and mass wasting, caused by these activities. will not result in an unacceptable reduction in soil productivity and water quality. FP II-25

Our previous comments: DEA states, "The Bitterroot National Forest has a long history of soil monitoring of commercial harvest activities to assure compliance with soil law and policies (PF-SOILS-006)." (p.87) What we did not see disclosed is that much of that monitoring shows soil compaction to be widespread and very long-lasting on the BNF. Prior to about 2005 the BNF Soil Scientist's monitoring research design and documentation were extremely professional. Instrumentation was used to validate and calibrate the usual subjective soil compaction measurements. His work was thoroughly peer-reviewed. His credentials and ethic led to him being leader of a Region 1 Soil Monitoring Task Force. His findings regarding existing damage to the foundation of the BNF productivity - the soils, are swept under the rug, undisclosed, in the Mud Creek Project DEA, but the evidence is on the land and can't be just swept away.

"Compare monitoring results prior to 2005 with results from recent years. BNF soils monitoring in preparation for

recent timber sales have found remarkably less existing soil damage than was found up to about 2005. Please disclose if soils are naturally recovering more quickly than before. Have you validated the effectiveness of your overly optimistic estimates of subsoiling treatments?

"The new, untested soil monitoring protocol described in the DEA Project File is the very definition of labyrinthian. In combination with the enigmatic conditions-based NEPA process it becomes meaningless to the public.

"The Bitterroot National Forest has developed a Soil Risk Evaluation Framework (SREF) to aid in adaptive management of the Mud Creek Proposed Action (see PF-SOILS-001 pages 3-5). The SREF approach uses proxy measurements of soil-water retention to determine soil resiliency in the project area (PF-SOILS-008 this measure is combined with previous forest activity (FACTS) data and previous soil disturbance monitoring data to provide a communication and analysis tool for soil resources in a condition-based treatment approach." (p. 87) Please provide validation monitoring and science-based references to support your incredibly convoluted approach.

"The SREF says, "For example, if a proposed project activity occurs within an area with high soil resilience and has documented past activities, the soil risk category falls within level "C," which requires a survey of existing soil DSD prior to implementation and application of appropriate design features." (PF-Soils-001, p3) In fact all cutting units must be surveyed on the ground before logging.

PF-Soils-001 language suggests cutting units may not be surveyed on the ground as indicated by the following language:

"The proposed treatment units identified for field review within the SREF framework will utilize detrimental soil disturbance walkthrough surveys and traverses following the Forest Soil Disturbance Monitoring Protocol. Units will be surveyed based on the Soil Risk Category (SRC) guidance outlined in Table S3."

"*Pre-project DSD or CWD soil surveys in units are only needed if the layout crew or other resource special survey identifies:

[middot] past disturbance (such as excavated skid trails, tree stumps or persistent fire consumed

[middot] CWD, high severity fire effects) covers greater than 15% of the unit; and/or

[middot] recent (< 10 years) high severity fire covers greater than 15% of the unit; and/or

[middot] lack of CWD."

"Soil inventory of persisting detrimental soil disturbance may be required within these project areas."

"We are particularly alarmed by the following loophole: "If the layout crew or other resource specialist survey does not identify lack of CWD and/or evidence of past management (such as excavated skid trails, tree stumps or persistent fire consumed CWD, high severity fire effects), no soil inventory in units is needed." Layout crews are not trained observers of soil damage. Like the FS in general, they focus on trees.

"Soil compaction is widespread across the BNF according to past monitoring, even discounting the soil compaction of the widespread road system, which is routinely discounted. The hydrologic effects of soil compaction, within the cutting unit as well as on roads, can accumulate downstream beyond the cutting unit causing a variety of issues including increases in high flows and advancement in timing of low flows. Too much increase in high flows can cause streambank instability. ECA, equivalent clearcut area, is one measurement that indicates when streambank instability threshold is being reached. What are the ECAs of the drainages within the

project area and what will they be after the project? We cannot tell what they will be afterwards because we don't know where what activity will be done.

"As indicated above, the following statement in the DEA is misleading: "Assessment of cumulative effects on soil quality and organic matter at scales larger than the specific treatment unit boundary (such as the watershed scale) Mud Creek Project Environmental Assessment misrepresents the effects of management activities by diluting the site-specific effects across a larger area. As such, this analysis will apply the 15% DSD soil resource indicator at the same scale as it is traditionally used under "unit-based" NEPA analyses." (DEA, p 89,90) Such an approach is appropriate for cutting units but unnecessarily and carelessly misses the bigger picture regarding accumulating hydrologic impacts as well as overall forest productivity.

"According to the Forest Plan Standard for soils you must, "Utilize equivalent road area or similar concept to evaluate cumulative effects of projects involving significant vegetation removal, prior to including them on implementation schedules." (FP, pII-23) Please disclose the total acreage of all existing as well as planned roads, of whatever nomenclature, within the project area so we can assess total soil compaction within the project area.

"The DEA discloses, "Some soils in the project area have reduced soils quality due to DSD that occurred over 60 years ago."

"Suggesting it may be time for additional soil damage the DEA cheerily announces, "Based on existing field surveys in and around the project area, most soils in previously disturbed areas that were implemented during the 1960's are recovering." (p.89) It is an ecological truism that once damaging activity stops natural healing can begin.

"Terraced plantations: The Mud Creek project area contains 79 terraces plantations ranging in size from 1 acre to 130 acres and totalling approximately 1,645 acres." (Mud Creek scoping letter) On a field trip to the area I heard a BNF soil scientist say he thinks terraced plantations may be within the legal limit of detrimental soil damage. The former BNF soil scientist consistently measured detrimental soil damage in terraced plantations at 90% or greater, far above the 15% limit.

"The implementation approach delays monitoring of existing soil damage until long after the Decision is final and there is nothing the public can do to protect the soils but to trust the accuracy, professionalism and transparency of the monitoring. We are dubious

"Appendix A Design Features, Sub Soiling; TRM-08, says subsoiling does not mix soil horizons. Please substantiate this with scientific reports and monitoring results.

"What is the percentage effectiveness of subsoiling in terms of returning the soil to original function and productivity? Please disclose science and monitoring results. Subsoiling can not be expected to be 100% effective.

"Please disclose results of monitoring weed control after past projects have been completed. It is apparent that after every timber and road building project weeds follow and proliferate, essentially reducing forest productivity in perpetuity, contrary to NFMA.

"Soil monitoring results from past NEPA analysis of former project areas within the Mud Creek project area should be disclosed in Mud Creek NEPA documents prior to a Record of Decision

"It is not clear how the DEA map of past harvest activities with existing soil impacts within the Mud Creek Project Area overlaps with the Mud Creek project because specific activity units have not been delineated.

The Mud Creek project draft DN and FONSI violate NEPA and NFMA.

Suggested Remedy:

Identify individual treatment units. Traverse and monitor existing soils conditions in each treatment unit. Disclose results in a DEIS. Allow the public to then make informed comments on the proposed project.

Issue: Beaver Introduction

The Bitterroot National Forest [BNF] Forest Plan includes the Forest-wide Management Standard, "Beaver will be introduced into suitable riparian habitat." (FP, p. II-20) The Mud Creek Project violates this requirement.

The Mud Creek Project Decision Notice states, "We designed the Mud Creek Project to address decreased resilience in forest ecosystems, decreased quality and abundance of important wildlife habitats, and resource concerns related to the existing roads and trails systems." (DN, p.2)

Beaver is a keystone species and a landscape architect that creates and protects resilience in forest ecosystems. "The Forest Service recognizes that beavers benefit the resilience of ecosystems within the plan area." (final EA, p. 47) Beaver are important and create habitat for important wildlife. Beaver mitigate resource impacts related to roads and trails. The role of beaver in forested ecosystem resilience is so well established it seems analysis of beaver introduction was arbitrarily eliminated from consideration for undisclosed reasons.

The Purpose and Need statement (DN, p.2) includes, [bull]"Improve landscape resilience to disturbances (such as insects, diseases, and fire) by modifying forest structure and composition and fuels"; and [bull]"Design and implement a suitable transportation and trail system for long-term land management that is responsive to public interests and reduces adverse environmental effects."

One of the most common disturbances on the BNF landscape is forest fire and the resulting increased runoff, which can increase siltation in streams as well as destabilize stream channels. Beaver, famously, help decrease stream siltation and offer flood control, reducing stream channel instability, thereby improving landscape resilience.

Forest roads are a common chronic disturbance on the BNF and are the leading cause of stream impairment and loss of ecosystem function on the BNF due to siltation. Again, beaver famously help decrease stream siltation.

Both these types of disturbance negatively impact water quantity and timing of runoff. Beaver moderate runoff and improve late season streamflow. Stream dewatering is a chronic problem in the Bitterroot. Resilience of BNF forest ecosystem and the Bitterroot economy would be increased by introduction of beaver on the BNF.

FOB et al comments (p.7) state: "It has been suggested that if the FS must do something positive to reduce wildfire (and to justify its existence), it should do everything in its power to restore the beaver to the lands the Agency manages. The beaver, a mere rodent, has repeatedly shown its taxpayer free water management activities do more to reduce the effects of wildfire and road sediment than the current assortment of Forest Service standard practices."

The BNF misstates and limits the scope of our comments as, "Commenters requested the introduction of beavers to the project area to meet the project purpose to reduce fire risk." Appendix B - Response to Comments B-15

Our concerns about beaver are then summarily dismissed, "The Forest Service recognizes that beavers benefit the resilience of ecosystems within the plan area. However, because the purpose and need is focused on resilience of and fire risk in upland forested ecosystems, management of beaver populations is outside of the

scope of this project. The final environmental assessment includes an alternative not analyzed in detail regarding management of beaver." (Final EA, p.47)

This response arbitrarily narrows the focus of an already narrowed Purpose and Need. The EA and DN prominently feature much analysis and focus on watershed health, which is directly impacted by beaver.

Despite our comments of concern and the prominence of beaver, given its own forest-wide Forest Plan Standard, beaver are not even mentioned in the Mud Creek Project Wildlife Analysis Report (WILD - 001), nor do we see a single mention of beaver in any project file wildlife reports.

The chart displayed as "Appendix A - Forest Plan Consistency" discloses the Standard: "10. Beaver will be introduced into suitable riparian habitat."

In the column labeled "Applicable to planning/ project development" the chart indicates "Yes" that Standard is applicable. We agree.

In the column labeled "Specific Design Feature, if needed" the chart says "Yes" and asks, "Have we ever done this?" No specific design feature is provided and no answer is given to the direct, simple question.

The column labeled "Activities/Areas where applicable." Discloses that Forest Plan consistency requires the Standard to be applied, "Project area wide as required based on management area specific criteria." Again, we agree.

The Mud Creek DN and FONSI violate the Bitterroot Forest Plan and thereby violate NFMA. NEPA is violated by lack of analysis and full disclosure.

Suggested Remedies

Determine criteria to identify "suitable" habitat for beaver introduction. Map, evaluate the potential of and prioritize suitable habitat for beaver introduction in the project area. Then offer and analyze an alternative that meets FP Standard for beaver introduction.

Consult and arrange with Montana Fish Wildlife and Parks mechanisms to protect introduced and naturally occurring beaver.

CONCLUSION

Friends of the Bitterroot, The Sierra Club, WildEarth Guardians, Alliance for the Wild Rockies, Native Ecosystems Council, and Friends of the Clearwater, hereby request a meeting to discuss potential resolution of issues raised in this objection, pursuant to 36 C.F.R. [sect] 218.11(a).

We hope that the Forest Service will use the objection process and such a meeting as opportunities to engage with stakeholders, including objectors here, to develop a project that is legally and ecologically sound and enjoys broad support from all stakeholders.