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Comments: Please find our comment on the Green Union draft EA attached in pdf format.

March 27, 2024

Tanner Shuler, Silviculturist USDA Forest Service

Wind River Ranger District 1403 West Ramshorn

PO Box 186

Dubois, WY, 82513

Re: Green Union Project

Dear Mr. Shuler,

Thank you for the opportunity to comment on the Green Union Project.

Please analyze the cumulative impacts of this project along with the other Forest Service projects and also activities on BLM, private and state land on grizzly bears, lynx, lynx critical habitat, whitebark pine, wolverine, big game, monarch butterflies, goshawks, and all native fish and wildlife in the Wind River Ranger District.

How will this project protect, maintain, and restore whitebark pine?

Will any of the clearcuts or openings be bigger than 40 acres?

If so please take public comment on the impact of openings over 40 acres.

Please formally consult with the US FWS on the impact of the project on whitebark pine.

Please formally consult with the US FWS on the SNF forest plan since whitebark pine were listed after the revised forest plan was signed.

Does the SNF have any forest plan biological assessment, bio- logical opinion, incidental take statement, and management di- rection amendment for whitebark pine?

Please see the attached paper by Six et al 2021 Whitebark Genetics 2021. Six et al. found:

"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. Because so little is known about the genetic diversity in most forest trees, and because it is key to effective conservation, studies of genetic diversity and structuring in forest trees should be a top priority in forest adaptation and conservation efforts."

The project is not following the best available science and is not meeting the purpose and need. Since Whitebark pine are now proposed to be listed under the ESA, you must formally consult with the FWS on the impact of the project on whitebark pine. To do this the Forest Service will need to have a complete and recent survey of the entire project area for whitebark pine and consider planting whitebark pine as the best available science by Keene et al. states is the only way to get new whitebark pine to grow. The Forest Service is incorrect when it states that the project will have "No significant effects would result from this project or cumulatively with other activities on National Forest or adjacent lands that would affect at-risk plant species' ability to persist on the landscape."

Not all ecosystems or all Rocky Mountain landscapes have experienced the impacts of fire exclusion. In some wilderness areas, where in recent decades natural fires have been allowed to burn, there have not been major shifts in vegetation composition and structure (Keane et al. 2002). In some alpine ecosystems, fire was never an important ecological factor. In some upper subalpine ecosystems, fires were important, but their rate of occurrence was too low to have been significantly altered by the relatively short period of fire suppression (Keane et al. 2002).

For example, the last 70 to 80 years of fire suppression have not had much influence on subalpine landscapes with fire intervals of 200 to several hundred years (Romme and Despain). Consequently, it is unlikely that fire exclusion has yet to significantly alter stand conditions or forest health within Rocky Mountain subalpine ecosystems. Whitebark pine seedlings, saplings and mature trees, present in subalpine forests proposed for burning, would experience mortality from project activity. Whitebark pine is fire intolerant (thin bark). Fire favors whitebark pine regeneration (through canopy opening and reducing competing vegetation) only in the presence of adequate seed source and dispersal mechanisms (Clarks Nutcracker or humans planting whitebark pine seedlings). White pine blister rust, an introduced disease, has caused rapid mortality of whitebark pine over the last 30 to 60 years.

Keane and Arno (1993) reported that 42 percent of whitebark pine in western Montana had died in the previous 20 years with 89 percent of remaining trees being infected with blister rust. The ability of whitebark pine to reproduce naturally is strongly affected by blister rust infection; the rust kills branches in the upper cone bearing crown, effectively ending seed production. Wyoming is currently experiencing a spruce beetle epidemic.

What peer-reviewed published scientific papers shows that the project will control the spruce beetle epidemic and/or reduce the amount or area burned by crown wildfires?

Do spruce beetle effect whitebark pine?

In some areas the few remaining whitebark that show the potential for blister rust resistance are being attacked and killed by mountain pine beetles, thus accelerating the loss of key mature cone-bearing trees. Whitebark pine seedlings and saplings are very likely present in the subalpine forests proposed for burning and logging. In the absence of fire, this naturally occurring whitebark pine regeneration would continue to function as an important part of the subalpine ecosystem.

Since 2005, rust resistant seed sources have been identified in the Northern Rockies (Mahalovich et al 2006). Due to the severity of blister rust infection within the region, natural whitebark pine regeneration in the project area is prospective rust resistant stock. Although prescribed burning can be useful to reduce areas of high-density subalpine fir and spruce and can create favorable ecological conditions for whitebark pine regeneration and growth, in the absence of sufficient seed source for natural regeneration maintaining the viability and function of whitebark pine would not be achieved through burning. Please find Keane and Arno attached. Planting of rust-resistant seedlings would likely not be sufficient to replace whitebark pine lost to fire activities. What surveys have been conducted to determine presence and abundance of whitebark pine re-generation?

Since Whitebark pine are now listed under the ESA, the USFS- USDA must formally reconsult with the USFWS on the impact of the project on whitebark pine. To do this the Forest Service will need to have a complete and recent survey of the entire project area for the presence of whitebark pine and consider planting whitebark pine as the best available science. Keene et al. states that the only way to get new whitebark pine is to grow (seedlings) them (submitted in our DEA comments).

Hundreds of acres of clearcutting and burning threaten individual whitebark pine trees in the project area, including miles and miles of new roads, and including clearings around individual whitebark pines. The Forest Service fails to disclose the level of "take" and the incredibly high failure rate of these practices as a technique for natural restoration, regeneration and recovery of whitebark pine under these conditions.

The Forest Service does not disclose or address the results of its only long-term study on the effects of tree cutting and burning on whitebark pine. This study, named "Restoring Whitebark Pine Ecosystems," included prescribed fire, "thinning", "selection cuttings," and "fuel enhancement cuttings" on multiple different sites. The results were that "[a]s with all the other study results, there was very little whitebark pine regeneration observed on these plots." See U.S. Forest Service, General Technical Report RMRS-GTR-232 (January 2010). These results directly undermine the representations the Forest Service makes in the Project EIS. More specifically, the Forest Service's own research at RMRS-GTR-232 finds: "the whitebark pine regeneration that was expected to result from this [seed] caching [in new openings] has not yet materialized. Nearly all sites contain very few or no whitebark pine seedlings." Thus, even ten years after cutting and burning, regeneration was "marginal." Moreover, as the Forest Service notes on its website: "All burn treatments resulted in high mortality in both whitebark pine and subalpine fir (over 40%)." Accordingly, the only proven method of restoration of whitebark pine is planting: "Manual planting of whitebark pine seedlings is required to adequately restore these sites."

Therefore the project's plan to cut down trees around whitebark pine will cause the whitebark pine to grow faster and then die from beetles. This is a violation of NEPA, NFMA, the APA and the ESA.

Please see the attached memo from the FWS about requirements for consulting with the FWS about whitebark pine now that they are listed as threatened.

For whitebark pine, spring or fall burning may kill seedlings susceptible to fire. For mature whitebark pine trees, the bark is relatively thin compared to other species such as ponderosa pine and susceptible to scorching from fire. Fires that approach the tree trunks may scorch the bark, diminishing the bark's protective properties from other stressors. Depending on the fireline intensity and residence time of lethal temperatures, the heat from the fire may also penetrate the bark, killing the underlying cambium layer. Harm to the bark and cambium may reduce individual tree vigor and also increase susceptibility to infections such as white pine blister rust or infestations by the mountain pine beetle. Whitebark pine seed banks and fine roots may also be impacted should fire move through an area when fuels and soil moisture is conducive to longer residence time of lethal temperatures. Seeds are buried by Clark's nutcrackers generally within one inch of the soil surface and may be susceptible to longer residence time of lethal temperatures. Fine roots located near the soil surface serve as the primary water absorbing roots for trees and may be harmed or killed with longer residence times of lethal temperatures when soil moisture is low which would lead to an increase in the penetration depth of lethal temperatures. In general, the proposed prescription would attempt to achieve a low severity surface fire in which shrubs, needle cast and upper duff layers would be consumed. In some instances, including dense stands in which commercial or non-commercial thinning is not feasible, higher severity fire effects may be preferred to achieve the desired condition for those forested stands. In the long term, broadcast burning in the vicinity of living whitebark pine stands may improve the habitat suitability for seed caching by Clark's nutcracker; seed germination; and whitebark pine seedling establishment. Clark's nutcrackers prefer to cache seeds in recently burned areas as fire removes understory plants and creates soil surfaces that are easier to penetrate for seed caching. In addition, in the long term, broadcast burning may reduce the vigor of other species that would compete with whitebark pine seedlings for sunlight, soil water, and nutrients."

Whitebark pine are now a threatened species and the project is in violation of the ESA.

On December 2, 2020, the U.S. Fish and Wildlife Service issued a rule proposing to list whitebark pine (*Pinus albicaulis*) under the Endangered Species Act. The Basin Creek - Butte Watershed Project area includes whitebark pine. The whitebark pine present in the project area represents a major source within the larger geographic area. The Project proposes tree cutting and burning across thousands of acres where whitebark pine may be present. Regardless of whether individual activities are intended to impact whitebark pine, whitebark pine may be affected by damage from equipment and equipment trails, cutting, soil compaction and disturbance, mortality from prescribed burning, scorching from jackpot burning, trampling of seedlings and saplings, and removal of necessary microclimates and nursery trees needed for sapling survival. Additionally, thousands of acres of whitebark pine habitat manipulation are proposed for the Project, including intentionally cutting and burning Whitebark pine trees. No discussion on the success rate of natural regeneration under these conditions is provided. No discussion of the success rate of planting seedlings in clearcuts is provided. There have been no surveys for whitebark pine in violation of the ESA, NEPA, NFMA, and the APA.

The Forest Service admits that whitebark pine is known to be present in the area and that the Project "may impact individuals. . . ." The Forest Service further admits: "some adverse impacts are possible." The Forest Service further admits that "implementation of the project may cause incidental loss of whitebark pine seedlings and saplings . . . ." Crucially, the Forest Service does not disclose or address the results of its only long-term study on the effects of tree cutting and burning on whitebark pine. This study, named "Restoring Whitebark Pine

Ecosystems," included prescribed fire, thinning, selection cuttings, and fuel enhancement cuttings on multiple different sites. The results were that "[a]s with all the other study results, there was very little whitebark pine regeneration observed on these plots." See U.S. Forest Service, General Technical Report RMRS-GTR-232 (January 2010). More specifically: "the whitebark pine regeneration that was expected to result from this [seed] caching [in new openings] has not yet materialized. Nearly all sites contain very few or no whitebark pine seedlings." Thus, even ten years after cutting and burning, regeneration was "marginal." Moreover, as the Forest Service notes on its website: "All burn treatments resulted in high mortality in both whitebark pine and subalpine fir (over 40%)." Accordingly, the only proven method of restoration of whitebark pine is planting: "Manual planting of whitebark pine seedlings is required to adequately restore these sites."

Please find attached "Restoring Whitebark Pine Ecosystems in the Face of Climate Change

Robert E. Keane, Lisa M. Holsinger, Mary F. Mahalovich, and Diana F. Tomback" and "Restoring Whitebark Pine Forests of the Northern Rocky Mountains, USA Robert E. Keane and Russell A. Parsons."

With the new roads will the project be in compliance with the road density standards?

How will the project effect big game?

Following the list of necessary elements, Alliance has also included a general narrative discussion on possible impacts of the Project, with accompanying citations to the relevant scientific literature. These references should be disclosed and discussed in the EIS or EA for the Project.

Please include a no commercial logging alternative.

NECESSARY ELEMENTS FOR PROJECT EIS or an EA if you choose to write an EA.

1. Disclose all SNF Plan requirements for logging/burning projects and explain how the Project complies with them;
2. Disclose the acreages of past, current, and reasonably foreseeable logging, grazing, and road-building activities within the Project area;
3. Solicit and disclose comments from the Wyoming Department of Game and Fish regarding the impact of the Project on wildlife habitat;
4. Solicit and disclose comments from the Wyoming Department of Environmental Quality regarding the impact of the Project on water quality;
5. Disclose the biological assessment for the candidate, threatened, or endangered species with potential and/or actual habitat in the Project area;

6. Disclose the biological evaluation for the sensitive and management indicator species with potential and/or actual habitat in the Project area;
7. Disclose the snag densities in the Project area, and the method used to determine those densities;
8. Disclose the current, during-project, and post-project road densities in the Project area; and disclose the number of road closure violations in the Wind River Ranger District during the last 5 years.
9. Disclose the SNF's record of compliance with state best management practices regarding stream sedimentation from ground-disturbing management activities;
10. Disclose the SNF's record of compliance with its monitoring requirements as set forth in its Forest Plan;
11. Disclose the SNF's record of compliance with the additional monitoring requirements set forth in previous DN/FONSI and RODs on the SNF;
12. Disclose the results of the field surveys for threatened, endangered, sensitive, and rare plants in each of the proposed units;
13. Disclose the level of current noxious weed infestations in the Project area and the cause of those infestations;
14. Disclose the impact of the Project on noxious weed infestations and native plant communities;
15. Disclose the amount of detrimental soil disturbance that currently exists in each proposed unit from previous logging and grazing activities;
16. Disclose the expected amount of detrimental soil disturbance in each unit after ground disturbance and prior to any proposed mitigation/remediation;
17. Disclose the expected amount of detrimental soil disturbance in each unit after proposed mitigation/remediation;
18. Disclose the analytical data that supports proposed soil mitigation/remediation measures;
19. Disclose the timeline for implementation;
20. Disclose the funding source for non-commercial activities proposed;
21. Disclose the current level of old growth forest in each third order drainage in the Project area;
22. Disclose the method used to quantify old growth forest acreages and its rate of error based upon field review of its predictions;
23. Disclose the historic levels of mature and old growth forest in the Project area;
24. Disclose the level of mature and old growth forest necessary to sustain viable populations of dependent wildlife species in the area;
25. Disclose the amount of mature and old growth forest that will remain after implementation;
26. Disclose the amount of current habitat for old growth and mature forest dependent species in the Project area;
27. Disclose the amount of habitat for old growth and mature forest dependent species that will remain after Project implementation;
28. Disclose the method used to model old growth and mature forest dependent wildlife habitat acreages and its rate of error based upon field review of its predictions;
29. Disclose the amount of big game (moose and elk) hiding cover, winter range, and security currently available in the area;
30. Disclose the amount of big game (moose and elk) hiding cover, winter range, and security during Project implementation;
31. Disclose the amount of big game (moose and elk) hiding cover, winter range, and security after implementation;
32. Disclose the method used to determine big game hiding cover, winter range, and security, and its rate of error as determined by field review;
33. Disclose and address the concerns expressed by the ID Team in the draft Five-Year Review of the Forest Plan regarding the failure to monitor population trends of MIS, the inadequacy of the Forest Plan old growth standard, and the failure to compile data to establish a reliable inventory of sensitive species on the Forest;
34. Disclose the actions being taken to reduce fuels on private lands adjacent to the Project area and how those activities/or lack thereof will impact the efficacy of the activities proposed for this Project;

1. Disclose the efficacy of the proposed activities at reducing wildfire risk and severity in the Project area in the

future, including a two-year, five-year, ten-year, and 20-year projection;

1. Disclose when and how the SNF made the decision to suppress natural wildfire in the Project area and replace natural fire with logging and prescribed burning and if you are continuing to suppress almost all wildfire;
2. Disclose the cumulative impacts on the Forest-wide level of the SNF's policy decision to replace natural fire with logging and prescribed burning;
3. Please disclose in more detail how the Project complies with the Roadless Rule. Page 17 of the Draft EA states: Effects to Sheridan Pass Inventoried Roadless Area (effects analyses in specialists' reports and this document consider effects to resources throughout the project area, including the Sheridan Pass Inventoried Roadless Area). Please put the specialist report on the project website so the public can read it.
4. Disclose the impact of climate change on the efficacy of the proposed treatments;
5. Disclose the impact of the proposed project on the carbon storage potential of the area;
6. Disclose the baseline condition, and expected sedimentation during and after activities, for all streams in the area;
7. Disclose maps of the area that show the following elements:

1. Past, current, and reasonably foreseeable logging units in the Project area;
2. Past, current, and reasonably foreseeable grazing allotments in the Project area;
3. Density of human residences within 1.5 miles from the Project unit boundaries;
4. Hiding cover in the Project area according to the Forest Plan definition;
5. Old growth forest in the Project area;
6. Big game security areas;
7. Moose winter range;

**SOIL PRODUCTIVITY** The SNF (FNF) adopted the Region 1 Soil Quality Standards, FSM 2500-99-1 (SQS), to assure compliance with the Forest Plan and NFMA. The SQS limit the areal extent of detrimental soil disturbance within logging units to no more than 15%. Soil Quality Standards "provide benchmark values that indicate when changes in soil properties and soil conditions would result in significant change or impairment of soil quality based on available research and Regional experience" (Forest Service Manual 2500, Region 1 Supplement 2500-

99-1, Chapter 2550 - Soil Management, Section 2554.1).

The intent of the Regional Soil Quality Standards is that the FS must, in each case, consider the cumulative effects of both past and proposed soil disturbances to assure the desired soil conditions are met. This includes impacts from activities that include logging, firewood gathering, livestock grazing, and motorized recreation impacts.

Please disclose percent detrimental disturbance estimates provided by watershed. What is the relevance of the areal extent of management-induced soil damage over such a geographic area? Alexander and Poff (1985) reviewed literature and found that the amount of soil damage varies even with the same logging system,

depending on many factors. For example, as much as 10% to 40% of a logged area can be disturbed by skyline logging.

They state: There are many more data on ground disturbance in logging, but these are enough to indicate the wide diversity of results obtained with different equipment operators, and logging techniques in timber stands of different composition in different types of terrain with different soils. Added to all these variables are different methods of investigating and reporting disturbance. The Sheep Creek Salvage FEIS (USDA Forest Service, 2005a) states at p. 173: Noxious weed presence may lead to physical and biological changes in soil. Organic matter distribution and nutrient flux may change dramatically with noxious weed invasion. Spotted knapweed (*Centaurea biebersteinii* D.C.) impacts phosphorus levels at sites (LeJeune and Seastedt, 2001) and can hinder growth of other species with allelopathic mechanism.

Specific to spotted knapweed, these traits can ultimately limit native species' ability to compete and can have direct impacts on species diversity (Tyser and Key 1988, Ridenour and Callaway 2001). Please disclose how the productivity of the land and soils been affected in the project area and forest wide due to noxious weed infestations, and how that situation is expected to change in the coming years and decades.

From Grier et al., (1989): The potential productivity of a site can be raised or lowered by management activities causing a permanent or long-term increase or decrease in the availability of nutrients essential for plant growth. (P. 27.) ...Any time organic matter is removed from a site, a net loss of nutrients from that site also occurs. In timber harvesting or thinning, nutrient losses tend to be proportional to the volume removed. (P. 27.) ...Slash burning is a common site preparation method that can affect soil chemical properties tremendously. A great deal of controversy is often associated with using fire because of the wide variety of effects, some of which are definitely detrimental to site quality and some of which are beneficial. (P. 30.) The FNF has never attempted to put in place a scientifically sound definition of "soil productivity" that

## REVIEW AND PROTECT CULTURAL AND HISTORICAL RESOURCES

Consultation with the State Historic Preservation Office (SHPO) must be completed prior to a decision being signed.

Any required protection measures provided from SHPO will be incorporated into my final decision.

Crucial to the preservation of the historical and cultural foundations of the nation, Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations, 36 C.F.R. Part 800 (PDF) (revised August 5, 2004) require Federal agencies to consider the effects of projects they carry out, approve, or fund on historic properties. Additionally, Federal agencies must provide the Advisory Council on Historic Preservation (ACHP) opportunity to comment on such projects prior to the agency's final decision.

A Federal project that requires review under Section 106 is defined as an "undertaking." An undertaking means a project, activity or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license, or approval.

Section 110 of the NHPA

Added to the NHPA in 1992, Section 110 requires Federal agencies to emphasize the preservation and enhancement of cultural resources. Section 110 directs agencies to initiate measures necessary to direct their policies, plans, and programs in such a way that federally-owned sites, structures, and objects of historical architectural or archaeological significance are preserved, restored, and maintained for the inspiration and benefit of the public. The agencies are also encouraged to institute (in consultation with the ACHP) procedures to assure Federal plans and programs contribute to the preservation and enhancement of non-Federally owned sites, structures, and objects of historical, architectural, and archaeological significance. Has the WY SHPO received this survey? The cultural surveys need to be done before the NEPA and NHPA process can be completed, which has not occurred. The project must be approved by the SHPO and the public needs to be given a chance to comment on this.

1. Preparation of an EA or EIS should be integrated with the NHPA Section 106 review. If the EA or EIS do not reference the NHPA Section 106 review or include a cultural resource NHPA Section 106 report, it could be grounds for an objection.
2. A NHPA Section 106 Review is usually required for every project, program, or activity on federal lands prior to approval of the action - see 36 CFR 800.2(a) and 36 CFR 800.1(c). The NHPA Section 106 review is required in addition to requirements under NEPA.
3. Comments and objections can be submitted for inadequate compliance for both NEPA and NHPA, as they are separate regulations but are both regulatory requirements for federal agencies.
4. If the NEPA administrative record does not include the NHPA Section 106 review document, you can request the document as part of your comments. If the document is not provided, you can then object that the document has not been provided for public review as required - see 36 CFR 800.2(d)
5. Agencies often claim they cannot disclose information about cultural resources because of confidentiality concerns. This is partially true, but agencies can only withhold information "when disclosure may cause a significant invasion of privacy; risk harm to the historic property; or impede the use of a traditional religious site by practitioners." 36 CFR 800.11(c). So for example, agencies can withhold cultural site location maps, but they cannot withhold documentation about the quantity and type of cultural resources affected by a project or documentation about how the resources may be impacted. If agencies continue to withhold information that does not risk harm to the historic property, you can object on the failure to disclose information as required.
6. For specific regulatory requirements, see below.
7. The NHPA Cultural Resource review process requires agencies to prepare documents as part of the NHPA Section 106 process, and most of the documents must be shared with the public 36 CFR 800.2(d)
8. Generally, if cultural resources are present in the project area, the agency must prepare a document with the following components and must "provide information on the finding to the public on request, consistent with the confidentiality provisions" per regulations at 36 CFR 800.5(d) .

Required documents are listed at 36 CFR 800.11(e)

1. A description of the undertaking, specifying the Federal involvement, and its area of potential effects, including photographs, maps, and drawings, as necessary
2. A description of the steps taken to identify historic properties
3. A description of the affected historic properties, including information on the characteristics that qualify them for the National Register
4. A description of the undertaking's effects on historic properties
5. An explanation of why the criteria of adverse effect were found applicable or inapplicable, including any conditions or future actions to avoid, minimize or mitigate adverse effects; and
6. Copies or summaries of any views provided by consulting parties and the public.
7. If any of the components listed above are not included during scoping or comment periods, the reviewers can request the information. If the information is not provided when the EA or EIS are released, you can object because the agency did not comply with the regulations - either because they did not prepare the documents or

because they did not disclose the documents to the public.

8. Be aware that the NHPA regulations frequently use the term - "historic property", which means "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places." 36 CFR 800.16(l).

Did the Forest Service conduct NEPA analysis (i.e. an EA or EIS) for the Fire Plan the Forest is using for this project? If you don't the project will be in violation of NEPA, NFMA, and the APA.

Please provide a map showing the WUI and the locations of all homes in comparison to the project area.

Please explain why the area qualifies as Wildland Urban Interface (WUI).

Please demonstrate that the WUI follows the statutory definition of the WUI in the Healthy Forest Restoration Act of 2003 which is 1 1/2 miles from a community.

Since the Forest Service did not conduct NEPA for the Fire Plan, please disclose the cumulative effects of Forest-wide implementation of the Fire Plan in the project EIS, or EA if you refuse to write an EIS, to avoid illegally tiering to a non-NEPA document. Specifically analyze the decision to prioritize mechanical, human-designed, somewhat arbitrary treatments as a replacement for naturally-occurring fire.

Did the Forest Service conduct ESA consultation for the Fire Plan?

Will the Forest Service be considering amending the SNF Forest Plan to include binding legal standards for noxious weeds?

How effective have BMPs been at stopping (i.e. preventing) new weed infestations from starting during logging and related road operations?

Is it true that new roads are the number one cause of new noxious weed infestations?

Why isn't the Forest Service considering a Forest Plan amendment in this Project to amend the Forest Plan to include binding legal standards that address noxious weeds?

Is it true that noxious weeds are one of the top threats to biodiversity on our National Forests?

How can the Forest Service be complying with NFMA's requirement to maintain biodiversity if it has no legal standards that address noxious weeds?

Will this Project address all Project area BMP needs, i.e. will the BMP road maintenance backlog and needs from this Project all be met by this Project?

The scoping notice was not clear if any MIS were found. What MIS did you find, how many and how did you look for these MIS?

How will the decreased elk security and thermal cover affect wolverines? Please formally consult with the US FWS on the impact of this project on wolverines. Wolverines need secure habitat in big game winter range.

Please formally consult with the US FWS on the impact of this project on Whitebark pine.

Which wildlife species and ecosystem processes, if any, does the fire-proofing in the proposed project benefit?

Which species and processes do fire-proofing harm?

What is your definition of healthier? What is your definition of resilient?

How will building 43 miles of new roads and clearcutting openings greater than 40 acres in size reduce sediment in streams?

What evidence do you have that this logging will make the forest healthier for fish and wildlife?

What about the role of mixed severity and high severity fire - what are the benefits of those natural processes?

Page 17 of the draft EA states: Issue 1: Elements of the Green Union Project could adversely impact aquatic habitats occupied by a number of fish and amphibian species.

Please explain in more detail how the project will impact fish and amphibian species and what these species are.

How have those processes (mixed and high severity fire) created the ecosystems we have today?

Over how many millennia have mixed and high severity fire have been occurring without human intervention?

What beneficial ecological roles do beetles play? You didn't answer this in violation of NEPA, NFMA and the APA.

Can the forest survive without beetles?

Will all WQLS streams in the project area have completed TMDLs before a decision is signed?

Will this project leave enough snags to follow the Forest Plan requirements and the requirements of sensitive old growth species such as flammulated owls and goshawks?

Will this Project exacerbate existing noxious weed infestations and start new infestations?

Do unlogged old growth forests store more carbon than the wood products that would be removed from the same forest in a logging operation?

What is the cumulative effect of National Forest logging on U.S. carbon stores? How many acres of

National Forest lands are logged every year? How much carbon is lost by that logging?

Is this Project consistent with "research recommendations (Krankina and Harmon 2006) for protecting carbon gains against the potential impacts of future climate change? That study recommends "[i]ncreasing or maintaining the forest area by avoiding deforestation," and states that "protecting forest from logging or clearing offer immediate benefits via prevented emissions."

Please take a hard look on how this project will effect climate change.

Page 21 of the Draft EA states:

On January 9, 2023, the Council on Environmental Quality (CEQ) published the National Environmental Policy Act Guidance on Consideration of Greenhouse Gas (GHG) Emissions and Climate Change (Council on Environmental Quality 2023). For projects managing biogenic carbon (that which is stored in, sequestered by, and emitted through organic matter), such as vegetation management or fuels reduction, the Council on Environmental Quality guidance permits agencies to use programmatic or broad-scale analyses to assess carbon or determine trends at the unit level. A quantitative assessment of forest carbon stocks and the factors that influence carbon trends (management activities, disturbances, and environmental factors) for the Shoshone National Forest is available in the project record (Dugan et al. 2024). These estimates are provided at the forest-level, as finer scale estimates are not available given the resolution of the underlying data source, the Nationwide Forest Inventory plot network maintained by the USDA Forest Service's Forest Inventory and Analysis (FIA) program. Forest Inventory and Analysis plots have an approximate density of one plot per 6,000 acres; the Green Union project area, at less than 10,000 acres, may only have one or two plots within the project area boundary, a number too small to provide reliable estimates of carbon at the project scale.

The carbon assessment shows that, "based on carbon baseline data derived from and other sources, the total carbon stocks of the Shoshone National Forest have likely declined during the time period from 1990 to 2020 (figure 3). Insects were the primary disturbance agent that negatively impacted carbon stocks in recent decades (Dugan et al. 2024). This is corroborated by the forest insect and disease report written for the nearby East Winds project, which describes significant historical damage from mountain pine beetle and the ongoing spruce beetle epidemic in and near the project area (Allen and Schotzko 2022).

Figure 3. Total carbon stocks from 1990 to 2020 for Shoshone National Forest estimated using the carbon calculation tools as described in Dugan et al. 2024

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Green Union Project: Environmental Assessment, Wind River Ranger District

Direct and Indirect Effects of the Proposed Action

The proposed Green Union Project includes both prescribed burning and silvicultural treatments that would be conducted on approximately 9,700 acres of the Shoshone National Forest. This scope and degree of change would be minor, affecting a maximum of 0.7 percent of the 1.34 million acres of forested land in the Shoshone. Proposed activities that could directly emit greenhouse gas emissions or affect carbon cycling on the Shoshone National Forest include timber harvesting of biogenic carbon; carbon emissions from pile burns and broadcast

burns; and fossil fuel emissions from equipment and machinery.

The actions taken under this goal, including manual and mechanical vegetation thinning as well as the application of prescribed fire, would have the direct effect of reducing the amount of biogenic carbon on the landscape in the near term as living and dead biomass is removed as timber or combusted in piles or broadcast burns. However, the indirect effects of these collective actions would be to reduce the likelihood of future carbon losses from insect mortality and wildfires. It is difficult to assess whether, or at what point in the future, the net carbon sequestration on the Shoshone National Forest would become greater under the proposed action compared to the no-action alternative. However, in light of the heavy negative impacts to carbon pools and forest health from past and ongoing insect outbreaks and the wildfire crisis, preventive action is warranted.

In recent history, timber harvest has not removed a significant amount of carbon from the Shoshone National Forest. Forest carbon losses associated with harvests have been vanishingly small compared to the total amount of carbon stored in the Shoshone National Forest, resulting in a loss of about 0.07 percent of non-soil carbon from 1990 to 2011 (Dugan et al.

2024). What is more, this estimate overstates the true climate impact of harvests because it does not attempt to account for continued storage of carbon in harvested wood products or the effect of substitution. The wood and fiber removed from the forest in this proposed project would be transferred to the wood products sector for a variety of uses, each of which has different effects on carbon (Skog et al. 2014). Carbon can be stored in wood products for a variable length of time, depending on the commodity produced. Wood can be used in place of other materials that emit more greenhouse gases, such as concrete, steel, and plastic (Gustavsson et al. 2006; Lippke et al. 2011; McKinley et al. 2011). Furthermore, by reducing stand density, the proposed action may also reduce the risk of more severe disturbances, such as insect and disease outbreak and severe wildfires, which may result in lower forest carbon stocks and greater greenhouse gases emissions. The harvest levels in the proposed action are at a scale that is comparable to historical forest management actions, and therefore it is reasonable to infer that the overall impact from harvests under the proposed action would, like past actions, not cause a significant loss to the overall carbon stock of the Shoshone National Forest.

The effect of the proposed broadcast burns focuses on the understory and forest floor pools, which together comprise about 30 percent of the forest-wide ecosystem carbon stocks. Carbon emissions associated with prescribed fires are mostly from duff, litter, and dead wood which would otherwise decay quickly over time, releasing carbon to the atmosphere even in the absence of fire. Furthermore, any initial carbon emissions from this proposed action would be balanced and possibly eliminated as the stands recover and regenerate, because the remaining trees and newly established trees typically have higher rates of growth and carbon storage (Hurteau and North 2009; McKinley et al. 2011). About 25 percent or more of the ecosystem carbon is in mineral soils, a very stable and long-lived carbon pool. Timber harvesting and prescribed burning generally result in a negligible amount of carbon loss from the mineral.

## Shoshone National Forest 23

Issue 1: The proposed project may affect climate change by producing greenhouse gas emissions and/or affecting biogenic (biologically based) carbon cycling.

## Green Union Project: Environmental Assessment, Wind River Ranger District

soils typically found in the United States, particularly when operations are designed in a way that minimize soil disturbance (Nave et al. 2010; McKinley et al. 2011).

Mechanical equipment associated with project activities, such as harvesting equipment and hauling trucks, would release greenhouse gas emissions from the fossil fuels that power them. However, the emissions are not expected to be significant. Compared to the 7.275 million metric tons of carbon dioxide equivalents (CO<sub>2</sub>e) associated with Wyoming's transportation sector in 2021 (U.S. Energy Information Administration 2023), the fossil fuel greenhouse gas emissions associated with implementing this project would be minor.

This is not taking a hard look at the impact of the project on climate change. Please see the attached order by federal district judge in Montana on our lawsuit on the Black Ram project where they wrote similar a similar analysis.

Regeneration/Restocking failure following wildfire, prescribed fire and/or mechanical tree-killing has not been analyzed or discussed. There is a considerable body of science that suggests that regeneration following fire is increasingly problematic.

NEPA requires disclosure of impact on "the human environment." Climate risk presents important adverse impacts on cultural, economic, environmental, and social aspects of the human environment. [dash] people, jobs, and the economy [dash] adjacent to and near the project area. Challenges in predicting responses of individual tree species to climate are a result of species competing under a never-before-seen climate regime [dash] one forests may not have experienced before either.

In an uncertain future of rapid change and abrupt, unforeseen transitions, adjustments in management approaches will be necessary and some actions will fail. However, it is increasingly evident that the greatest risk is posed by continuing to implement strategies inconsistent with and not informed by current understanding of our novel future....

Achievable future conditions as a framework for guiding forest conservation and management, Forest Ecology and Management 360 (2016) 80-96, S.W. Golladay et al. (Please, find attached with our comments.)

Stands are at risk of going from forest to non-forest, even without the added risk of "management" as proposed in the project area.

The Bitterroot National Forest has not yet accepted that the effects of climate risk represent a significant issue, and eminent loss of forest resilience already, and a significant and growing risk into the "foreseeable future?"

It is now time to speak honestly about unrealistic expectations relating to desired future condition. Forest managers have failed to disclose that at least five common tree species, including aspens and four conifers, are at great risk unless atmospheric greenhouse gases and associated temperatures can be contained at today's levels of concentration in the atmosphere. This cumulative ("reasonably foreseeable") risk must not continue to be ignored at the project-level, or at the programmatic (Forest Plan) level.

Global warming and its consequences may also be effectively irreversible which implicates certain legal consequences under NEPA and NFMA and ESA (e.g., 40 CFR [sect] 1502.16; 16 USC [sect]1604(g); 36 CFR [sect]219.12; ESA Section 7; 50 CFR [sect][sect]402.9, 402.14). All net carbon emissions from logging represent "irretrievable and irreversible commitments of resources."

It is clear that the management of the planet's forests is a nexus for addressing this largest crisis ever facing humanity. Yet the EA fails to even provide a minimal quantitative analysis of project or agency-caused CO2 emissions or consider the best available science on the topic. This is Immensely unethical and immoral. The lack of detailed scientific discussions in the EA concerning climate change is far more troubling than the document's failures on other topics, because the consequences of unchecked climate change will be disastrous for food production, sea level rise, and water supplies, resulting in complete turmoil for all human societies. This is an issue as serious as nuclear annihilation (although at least with the latter we're not already pressing the button).

Page 73 of the EA states: "By reducing the risk of large wildfires, the largest source of carbon emissions, the Proposed Action will lower the potential for increased carbon emissions. Additionally, the establishment of new and vigorously growing age-classes will improve carbon stores (Birdsey et al. 2019)." Birdsey et al. 2019 does not mention anything about logging reducing the threat of large wildfires.

Rhodes and Baker in a paper that looked at thinning and ponderosa pine forest find a very low probability of a thinned site encountering a fire during the narrow window when tree density is lowest. Another review paper by fire specialists at the Missoula Fire Lab about fuel reductions concluded: "The majority of acreage burned by wildfire in the US occurs in very few wildfires under extreme conditions. Under these extreme conditions, suppression efforts are largely ineffective."

Please see the column below by George Wuerthner, published in the October 11, 2019, Statesman Journal.

Fuels don't drive wildfires; climate and weather are the dominant factor | Opinion

GeorgeWuerthner Guest Opinion

The Wildfire Council set up by Oregon Gov. Kate Brown has many good recommendations including the need to reduce the flammability of communities, implementation of more effective evacuation routes, and other measures that will undoubtedly contribute to a safer and healthier environment for Oregon citizens.

However, the council puts a lot of emphasis on ramping up the logging of our forests as a means of precluding large wildfires. The underlying assumption of the recommendations is that fuels drive wildfires.

Yet according to the Oregon Department of Forestry in 2019 only 16,868 acres burned in the state, compared to 846,411 acres burned last year. Why the big difference? Is there that much less fuel? If fuel is the reason, we are seeing large acreages burn, then why so little this past year?

Opinion: Logging our forests is a misguided solution

The obvious reason and what the research shows is that climate/weather is the dominant factor in all large wildfires. If you have drought, low humidity, high temperatures, and high winds, you get large fires—regardless of the fuel load.

That is why even though the Oregon Coast forests have some of the highest "fuel loadings" in the nation, they seldom burn.

The Wildfire Council continues to "sell" the myth that fuels are the problem and logging our forests is the solution.

The Council ignores the growing science that calls into question the efficiency and effectiveness of fuel reductions.

For instance, Rhodes and Baker in a paper that looked at thinning and ponderosa pine forest find a very low probability of a thinned site encountering a fire during the narrow window when tree density is lowest.

Another review paper by fire specialists at the Missoula Fire Lab about fuel reductions concluded: "The majority of acreage burned by wildfire in the US occurs in very few wildfires under extreme conditions. Under these extreme conditions, suppression efforts are largely ineffective."

The authors go on to suggest: "Extreme environmental conditions ... overwhelmed most fuel treatment effects. . . This included almost all treatment methods including prescribed burning and thinning. . . . Suppression efforts had little benefit from fuel modifications."

The Congressional Research Service (CRS) : "From a quantitative perspective, the CRS study indicates a very weak relationship between acres logged and the extent and severity of forest fires. [hellip] the data indicate that fewer acres burned in areas where logging activity was limited."

The Shoshone National Forest has not yet accepted that the effects of climate risk represent a significant issue, and eminent loss of forest resilience already, and a significant and growing risk into the "foreseeable future?"

It is now time to speak honestly about unrealistic expectations relating to desired future condition. Forest managers have failed to disclose that at least five common tree species, including aspens and four conifers, are at great risk unless atmospheric greenhouse gases and associated temperatures can be contained at today's levels of concentration in the atmosphere. This cumulative ("reasonably foreseeable") risk must not continue to be ignored at the project-level, or at the programmatic (Forest Plan) level.

Global warming and its consequences may also be effectively irreversible which implicates certain legal consequences under NEPA and NFMA and ESA (e.g., 40 CFR [sect]1502.16; 16 USC [sect]1604(g); 36 CFR [sect]219.12; ESA Section 7; 50 CFR [sect][sect]402.9, 402.14). All net carbon emissions from logging represent "irretrievable and irreversible commitments of resources."

It is clear that the management of the planet's forests is a nexus for addressing this largest crisis ever facing humanity. Yet the FSEIS fails to even provide a minimal quantitative analysis of project or agency-caused CO2 emissions or consider the best available science on the topic. This is immensely unethical and immoral. The lack of detailed scientific discussions in the FSEIS concerning climate change is far more troubling than the document's failures on other topics, because the consequences of unchecked climate change will be disastrous for food production, sea level rise, and water supplies, resulting in complete turmoil for all human societies. This is an issue as serious as nuclear annihilation (although at least with the latter we're not already pressing the button).

The EA provided a pittance of information on climate change effects on project area vegetation. The FSEIS provides no analysis as to the veracity of the project's Purpose and Need, the project's objectives, goals, or desired conditions. The FS has the responsibility to inform the public that climate change is and will be bringing forest change. For the Mud Creek project, this did not happen, in violation of NEPA.

The EA fails to consider that the effects of climate change on the project area, including that the "desired" vegetation conditions will likely not be achievable or sustainable. The EA fails to provide any credible analysis as to how realistic and achievable its desired conditions are in the context of a rapidly changing climate, along an unpredictable but changing trajectory.

The Forest Plan does not provide meaningful direction on climate change. Nor does the EA acknowledge pertinent and highly relevant best available science on climate change. This project is in violation of NEPA.

The EA 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 EA fails to provide estimates of the total amount of carbon dioxide (CO<sub>2</sub>) or other greenhouse gas emissions caused by FS management actions and policies—forest-wide, regionally, or nationally. Agency policymakers seem comfortable maintaining a position that they need not take any leadership on this issue, and obfuscate via this EA to justify their failures.

The best scientific information strongly suggests that management that involves removal of trees and other biomass increases atmospheric CO<sub>2</sub>. Unsurprisingly the FSEIS doesn't state that simple fact.

The EA 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 LNF.

The EA also ignores CO<sub>2</sub> and other greenhouse gas emissions from other common human activities related to forest management and recreational uses. These include emissions associated with machines used for logging and associated activities, vehicle use for administrative actions, and recreational motor vehicles.

The FS is simply ignoring the climate impacts of these management and other authorized activities.

The Committee of Scientists, 1999 recognize the importance of forests for their contribution to global climate regulation. Also, the 2012 Planning Rule recognizes, in its definition of Ecosystem services, the "Benefits people obtain from ecosystems, including: (2) Regulating services, such as long term storage of carbon; climate regulation..."

We have no more time to prevaricate, and it's not a battle we can afford to lose. We each have a choice: submit to status quo for the profits of the greediest 1%, or empower ourselves to limit greenhouse gas emissions so not just a couple more generations might survive.

The District Court of Montana ruled in Case 4:17-cv-00030- BMM that the Federal government did have to evaluate the climate change impacts of the federal government coal program. Please find the order attached.

In March 2019, U.S. District Judge Rudolph Contreras in Washington, D.C., ruled that when the U.S. Bureau of Land Management (BLM) auctions public lands for oil and gas leasing, officials must consider emissions from past, present and foreseeable future oil and gas leases nationwide. The case was brought by WildEarth Guardians and Physicians for Social Responsibility.

In March of 2018 the Federal District Court of Montana found the Miles City (Montana) and Buffalo (Wyoming) Field Office's Resource Management Plans unlawfully overlooked climate impacts of coal mining and oil and gas drilling. The case was brought by Western Organization of Resource Councils, Montana Environmental Information Center, Powder River Basin Resource Council, Northern Plains Resource Council, the Sierra Club, and the Natural Resources Defense Council.

The project is in violation of NEPA, NFMA, the APA, the ESA for not examining the impacts of the project on climate change. The project will eliminate the forest in the project area. Forests absorb carbon. The project will destroy soils in the project area. Soils are carbon sinks.

Please see the following article that ran in the Missoulian on March 11, 2019.

Fire study shows landscapes such as Bitterroot's Sapphire Range too hot, dry to restore trees

ROB CHANEY rchaney@missoulian.com Mar 11, 2019

Burned landscapes like this drainage in the Sapphire Mountains hasn't been able to grow new trees since the Valley Complex fire of 2000, due to lack of soil moisture, humidity and seed trees, as well as excess heat during the growing season.

University of Montana students Erika Berglund and Lacey Hankin helped gather samples for a study showing tree stands are getting replaced by grass and shrubs after fire across the western United States due to climate change.

Courtesy Kim Davis

Fire-scarred forests like the Sapphire Range of the Bitterroot Valley may become grasslands because the growing seasons have become too hot and dry, according to new research from the University of Montana.

"The drier aspects aren't coming back, especially on north-facing slopes," said Kim Davis, a UM landscape ecologist and lead investigator on the study. "It's not soil sterilization. Other vegetation like grasses are re-sprouting. It's too warm. There's not enough moisture for the trees."

Davis worked with landscape ecologist Solomon Dobrowski, fire paleoecologist Philip Higuera, biologist Anna Sala and geoscientist Marco Maneta at UM along with colleagues at the

U.S. Forest Service and University of Colorado-Boulder to produce the study, which was released Monday in the Proceedings of the National Academy of Sciences journal.

"What's striking is if you asked scientists two decades ago how climate warming would play out, this is what they expected we'd see," Higuera said. "And now we're starting to see those predictions on the impact to ecosystems play out."

The study concentrated on regrowth of Ponderosa pine and Douglas fir seedlings in Montana, Idaho, Colorado, New Mexico, Arizona and northern California. Field workers collected trees from 90 sites, including 40 in the northern Rocky Mountains, scattered within 33 wildfires that had occurred within the past 20 years.

"We did over 4,000 miles of road-tripping across the West, as well as lots of miles hiking and backpacking," Davis said. The survey crews brought back everything from dead seedlings to

4-inch-diameter tree rings; nearly 3,000 samples in total. Then they analyzed how long each tree had been growing and what conditions had been when it sprouted.

Before the 1990s, the test sites had enough soil moisture, humidity and other factors to recruit new seedlings after forest fires, Dobrowski said.

"There used to be enough variability in seasonal conditions that seedlings could make it across these fixed thresholds," Dobrowski said. "After the mid-'90s, those windows have been closing more often. We're worried

we'll lose these low-elevation forests to shrubs or grasslands. That's what the evidence points to."

After a fire, all kinds of grasses, shrubs and trees have a blank slate to recover. But trees, especially low-elevation species, need more soil moisture and humidity than their smaller plant cousins. Before the mid-90s, those good growing seasons rolled around every three to five years. The study shows such conditions have evaporated on virtually all sites since 2000.

"The six sites we looked at in the Bitterroots haven't been above the summer humidity threshold since 1997," Higuera said. "Soil moisture hasn't crossed the threshold since 2009."

The study overturns some common assumptions of post-fire recovery. Many historic analyses of mountain forests show the hillsides used to hold far fewer trees a century ago, and have become overstocked due to the efforts humans put at controlling fire in the woods. Higuera explained that some higher elevation forests are returning to their more sparse historical look due to increased fires.

"But at the lower fringes, those burn areas may transition to non-forest types," Higuera said, "especially where climate conditions at the end of this century are different than what we had in the early 20th Century."

The study also found that soil sterilization wasn't a factor in tree regrowth, even in the most severely burned areas. For example, the 2000 Sula Complex of fires stripped forest cover in the southern end of the Bitterroot Valley. While the lodgepole pine stands near Lost Trail Pass have recovered, the lower-elevation Ponderosa pine and Douglas firs haven't.

Another factor driving regeneration is the availability of surviving seed trees that can repopulate a burn zone. If one remains within 100 meters of the burned landscape, the area can at least start the process of reseeded. Unfortunately, the trend toward high-severity fires has reduced the once-common mosaic patterns that left some undamaged groves mixed into the burned areas.

Higuera said he hoped land managers could use small or prescribed fires to make landscapes more resilient, as well as restructure tree-planting efforts to boost the chances of heavily burned places.

Rob Chaney

Natural Resources & Environment Reporter Natural Resources Reporter for The Missoulian.

Please write an EIS for this project if the FS still wants to pursue it, which includes an analysis that examines climate change in the context of project activities and Desired Conditions. Better yet, it's time to prepare an EIS on the whole bag of U.S. Government climate policies.

The NFMA requires in the face of increasing climate risk, growing impacts of wildfire and insect activity, plus scientific research findings, the FS must disclose the significant trend in post-fire regeneration failure. The forest has already experienced considerable difficulty restocking on areas that have been subjected to prescribed fire, clear-cut logging, post-fire salvage logging and other even-aged management "systems."

NFMA (1982) regulation 36CFR 219.27(C)(3) implements the NFMA statute, which requires restocking in five years.

Forest managers must analyze and disclose the fact that the Shoshone National Forest can no longer "insure that timber will be harvested from the National Forest system lands only where there is assurance that such lands can be restocked within five years of harvest?" (NFMA[sect]6(g)(3)(E)(ii)).

The project goals and expectations are not consistent with NFMA's "adequate restocking" requirement. Scientific research can no longer be ignored.

"At dry sites across our study region, seasonal to annual climate conditions over the past 20 years have crossed these thresholds, such that conditions have become increasingly unsuitable for regeneration. High fire severity and low seed availability further reduced the probability of post-fire regeneration. Together, our results demonstrate that climate change combined with high severity fire is leading to increasingly fewer opportunities for seedlings to establish after wildfires and may lead to ecosystem transitions in low-elevation ponderosa pine and Douglas-fir forests across the western United States."

#### Wildfires and climate

change push low-elevation forests across a critical climate threshold for tree regeneration, PNAS (2018), Kimberley T. Davis, et al. (Please, find attached)

Forests are already experiencing emissions-driven deforestation on both the post-fire and post-logging acreage. Areas where the cumulative effects of wildfire, followed by salvage logging on the same piece of ground are error upon error, with decades of a routine that can rightfully be described as willful ignorance and coverup.

Where is the reference to restocking? Monitoring data and analysis? If monitoring has been done there is no disclosure documenting the scope and probability of post-fire regeneration failures in the project area. NFMA

requires documentation and analysis that accurately estimates climate risks driving regeneration failure and deforestation - all characteristic of a less "resilient" forest.

"In the US Rocky Mountains, we documented a significant trend of post-fire tree regeneration, even over the relatively short period of 23 years covered in this analysis. Our findings are consistent with the expectation of reduced resilience of forest ecosystems to the combined impacts of climate warming and wildfire activity. Our results suggest that predicted shifts from forest to non-forested vegetation." Evidence for declining forest resilience to wildfires under climate change, Ecology Letters, (2018) 21: 243-252, Stevens-Rumens et al. (2018). (Please find attached)

The Forest Plan is based on assumptions largely drawn from our past that no longer hold true. These assumptions, made decades ago, must be challenged, and amended, where overwhelming evidence demonstrates a change of course is critical. It is time to take a step back, assess the present and future and make the necessary adjustments, all in full public disclosure to the Congress and the American people. Many acres of (conifers) In many areas, conifers haven't shown "resilience" enough to spring back from disturbance. Regeneration is already a big problem. (Emphasis added).

Both RPA and NFMA mandate long-range planning which impose numerous limitations on commodity production, including grazing, timber harvesting practices and the amount of timber sold annually. These long-range plans are based on assumptions, which are based on data, expert opinion, public participation and other factors that all, well almost all, view from a historical perspective. Assumptions that drove forest planning guidance decades ago, when climate risk was not known as it is today, are obsolete today.

Present and future climate risk realities demand new assumptions and new guidance.

A proper reexamination of the assumptions relating to resilience and sustainability contained in the Forest Plan is necessary. Scientific research supporting our comments focus on important data and analysis. A full discussion and disclosure of the following is required: 1) trends in wildfires, insect activity and tree mortality, 2) past regeneration success/failure in the project area, and 3) climate-risk science - some of which is cited below. Our comments, and supporting scientific research clearly "demonstrates

connection between prior specific written comments on the particular proposed project or activity and the content of the objection[hellip]"

The project is in violation of NEPA, NFMA, the Forest Plan and the APA.

Sec. 6. of the National Forest Management Act states:

(g) As soon as practicable, [hellip] the Secretary shall [hellip] promulgate regulations, under the principles of the Multiple-Use, Sustained- Yield Act of 1960[hellip]

The regulations shall include, but not be limited to-

(3) specifying guidelines for land management plans developed to achieve the goals of the Program which-

1. insure that timber will be harvested from National Forest System lands only where-

1. soil, slope, or other watershed conditions will not be irre- versibly damaged;

NFMA regulations at 36 C.F.R. [sect] 219.27 (Management require- ments) state:

1.

1.

1. Resource protection. All management prescriptions shall[mdash]

(1) Conserve soil and water resources and not allow significant or permanent impairment of the productivity of the land;

1.

1.

1. Vegetative manipulation. Management prescriptions that in- volve vegetative manipulation of tree cover for any purpose shall--

(5) Avoid permanent impairment of site productivity and ensure conservation of soil and water resources;

The project-level, and programmatic-level (Forest Plan) fail to publicly disclose the current and future impacts of climate risk to our national forests. NEPA requires cumulative effects analy- sis at the programmatic level, and at the project-level. The fail- ure to assess and disclose all risks associated with vegetative- manipulation (slash and burn) units in the project area in the proper climate-risk context/scenario violates the NFMA, NEPA and the APA.

In the face of increasing climate risk, growing impacts of wild- fire and insect activity, plus scientific research findings, NEPA analysis and disclosure must address the well-documented trend in post-fire regeneration failure. The project has already experi- enced difficulty restocking on areas that burned in the 1988 wildfire. NFMA (1982) regulation 36 CFR 219.27(c)(3) imple- ments the NFMA statute, which requires adequate restocking in five years.

Given the forest's poor history of restocking success and its fail- ure to employ the best available science, the adequacy of the site-specific and programmatic NEPA/NFMA process begs for further analysis and disclosure of the reality of worsening cli- mate conditions which threaten - directly and cumulatively - to turn forest into non-

forested vegetation, or worse. The desired future condition described in the Purpose and Need, or in the Forest Plan is not deforestation.

The Forest Plan is based on assumptions largely drawn from our past. These assumptions must be challenged, and amended, where overwhelming evidence demonstrates a change of course is critically important. It is time to take a step back, assess the future and make the necessary adjustments, all in full public disclosure to the Congress and the American people.

The EA fails to acknowledge the likelihood that "[hellip]high seedling and sapling mortality rates due to water stress, competing vegetation, and repeat fires that burn young stands," which will likely lead to a dramatic increase in non-forest land acres.

Many acres of (conifers) trees already fail to regenerate. (Emphasis added). A map of these areas is required. In many areas, conifers haven't shown "resilience" enough to spring back from disturbance.

Looking to the Future and Learning from the Past in our National Forests: Posted by Randy Johnson, U.S. Forest Service Research and Development Program, on November 1, 2016 at 11:00 AM  
<http://blogs.usda.gov/2016/11/01/looking-to-the-future-and-learning-from-the-past-in-our-national-forests/>

Excerpt:

"Forests are changing in ways they've never experienced before because today's growing conditions are different from anything in the past. The climate is changing at an unprecedented rate, exotic diseases and pests are present, and landscapes are fragmented by human activity often occurring at the same time and place.

When replanting a forest after disturbances, does it make sense to try to reestablish what was there before? Or, should we find re-plant material that might be more appropriate to current and future conditions of a changing environment?

Restoration efforts on U.S. Forest Service managed lands call for the use of locally adapted and appropriate native seed sources. The science-based process for selecting these seeds varies, but in the past, managers based decisions on the assumption that present site conditions are similar to those of the past."

"This may no longer be the case."

The selected scientific research presented above is only a sampling of the growing body of evidence that supports the need to disclose the consequences of the proposed action in a proper context - a hotter forest

environment, with more frequent drought cycles. This evidence brings into question the Purpose and Need for the project. It also requires the FS to reconsider the assumptions, goals and expected desired future condition expressed in the existing Forest Plan. Plan expectations must be amended at the programmatic level before proceeding with pro-posed project-level action(s). According to best available science, implementing the project will most likely accomplish the opposite of the desired future condition. We can adjust as we monitor and find out more. However, to willfully ignore what we do know and fail to disclose it to the public is a serious breach of public trust and an unconscionable act. Climate risk is upon us. A viable alternative to the proposal is not only reasonable and prudent, but it is the right thing to do.

The EA is in violation of NEPA, NFMA, the ESA and the APA because the project will adversely affect biological diversity, is not following the best available science and the purpose and need will not work. The Committee of Scientists, 1999 recognize the importance of forests for their contribution to global climate regulation. Also, the 2012 Planning Rule recognizes, in its definition of Ecosystem services, the "Benefits people obtain from ecosystems, including: (2) Regulating services, such as long term storage of carbon; climate regulation..."

We have no more time to prevaricate, and it's not a battle we can afford to lose. We each have a choice: submit to status quo for the profits of the greediest 1%, or empower ourselves to limit greenhouse gas emissions so not just a couple more generations might survive.

Please write an EIS that has Forest Plan Amendments that are needed to establish standards and guidelines which acknowledge the significance of climate risk to other multiple-uses and that projects like this contribute to global warming.

Amendments must not only analyze forest-wide impacts, but the regional, national and global scope of expected environmental changes. Based on scientific research, the existing and projected irretrievable losses must be estimated. Impacts caused by gathering climate risk (heat, drought, wind) and its symptoms, including wildfire, insect activity, and regeneration failure and mature tree mortality must be analyzed cumulatively.

The selected scientific research presented above is only a sampling of the growing body of evidence that supports the need to disclose the consequences of the proposed action in a proper context - a hotter forest environment, with more frequent drought cycles. This evidence brings into question the Purpose and Need for the project. It also requires the FS to reconsider the assumptions, goals and expected desired future condition expressed in the existing Forest Plan. Plan expectations must be amended at the programmatic level before proceeding with pro-posed project-level action(s).

According to best available science, implementing the project will most likely accomplish the opposite of the desired future condition. However, to willfully ignore what we do know and fail to disclose it to the public is a serious breach of public trust and an unconscionable act. Climate risk is upon us. A viable alternative to the proposal is not only reasonable and prudent, but it is the right thing to do.

Please list each visual quality standard that applies to each unit and disclose whether each unit meets its respective visual quality standard.

Please disclose whether you have conducted surveys in the Project area for this Project for whitebark pine, Monarch butterflies, wolverines, grizzly bears, pine martens, northern goshawk lynx critical habitat, and lynx, as required by the Forest Plan.

Please disclose the last time the Project area was surveyed for whitebark pine, Monarch butterflies, grizzly bears, wolverines, pine martens, whitebark pine, northern goshawk, and lynx.

Please disclose how often the Project area has been surveyed for whitebark pine, native fish, wolverines, Monarch butterflies, grizzly bears, pine martens, northern goshawks, and lynx.

Would the habitat be better for whitebark pine, Monarch butterflies, grizzly bears, wolverines, pine martens, northern goshawks, native fish, and lynx if roads were removed in the Project area?

Please provide us with the full BA for the whitebark pine, Monarch butterflies, bull trout, native fish, grizzly bears, wolverines, pine martens, northern goshawks, lynx critical habitat, and lynx.

Please formally consult with the U.S. Fish and Wildlife Service on the impact of the project on whitebark pine, Monarch butterflies, grizzly bears, wolverines, pine martens, northern goshawks, lynx critical habitat, and lynx.

The Forest Plan and the Green Union project weakens grizzly bear habitat protections by allowing new roadbuilding throughout the project area, without meaningful and permanent reclamation of other roads elsewhere in the Forest to compensate for the new road construction. The New roadbuilding in the Green Union project without meaningful reclamation to ensure no net increase in the road system presents a significant threat to grizzly bears, because motor vehicle users and other recreationists can trespass on the supposedly "impassable" roads and thus encroach on grizzly bear habitat. Further, even unused roads cause detrimental impacts to grizzly bear survival and reproduction, because grizzly bears are displaced from roaded habitat, regardless of whether the roads receive public or administrative use.

However, in concluding that the Forest Plan will not jeopardize the species, FWS's

Please see the attached paper titled: "Management of forests and forest carnivores: Relating landscape mosaics to habitat quality of Canada lynx at their range periphery" by Holbrook et al. 2019. It states that all lynx habitat has to be monitored for lynx.

The vast majority of the project area is in lynx critical habitat. Page 35 of the draft EA states:

The proposed action includes vegetation treatments that would temporarily

reduce the quality and quantity of snowshoe hare and lynx foraging habitat within the action area. Regeneration harvests would convert 1,828 acres of lynx habitat to the stand initiation structural stage that is temporarily unsuitable for hares and lynx. Manipulation of 1,454 acres of hare habitat within the wildland-urban interface by precommercial thinning, hazardous fuels reduction thinning, and roadside thinning treatments would temporarily degrade hare and lynx habitat. Vegetation treatments would affect 2,262 acres of snowshoe hare habitat in multistory mature or late seral forests. These treatments would reduce lynx foraging habitat until this habitat once again provides hare habitat through forest succession (possibly 20-30 years).

Where salvage treatments intersect with hare habitat in multistory mature or late seral forests (113 acres), skid trails would cause incidental damage to hare habitat and lynx denning habitat would be reduced.

Recent scientific findings undermine the Forest Plan/NRLMD direction for management of lynx habitat. This creates a scientific controversy the FS fails to resolve, and in fact it essentially ignores it.

For one, Kosterman, 2014 found that 50% of lynx habitat must be mature undisturbed forest for it to be optimal lynx habitat where lynx can have reproductive success and no more than 15% of lynx habitat should be young clearcuts, i.e. trees under 4 inches dbh. Young regenerating forest should occur only on 10-15% of a female lynx home range, i.e. 10-15% of an LAU. This renders inadequate the agency's assumption in the Forest Plan/NRLMD that 30% of lynx habitat can be open, and that no specific amount of mature forest needs to be conserved. Kosterman, 2014 demonstrates that Forest Plan/NRLMD standards are not adequate for lynx viability and recovery.

Also, the Forest Plan essentially assumes that persistent effects of vegetation manipulations other than regeneration logging and some intermediate treatments are essentially nil. However, 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 ...there was a consistent cost in that lynx use was low up to ?10 years after all silvicultural actions." (Emphasis added.) From their conclusions:

First, we demonstrated that lynx clearly use silviculture treatments, but there is a 10 year cost of implementing any treatment (thinning, selection cut, or regeneration cut) in terms of resource use by Canada lynx. This temporal cost is associated with lynx preferring advanced regenerating and mature structural stages (Squires et al., 2010; Holbrook et al., 2017a) and is consistent with previous work demonstrating a negative effect of precommercial thinning on snowshoe hare densities for 10 years (Homyack et al., 2007). Second, if a treatment is implemented, Canada lynx used thinnings at a faster rate post-treatment (e.g., 20 years posttreatment to reach 50% lynx use) than either selection or regeneration cuts (e.g., 34-40 years post-treatment to reach 50% lynx use). Lynx appear to use regeneration and selection cuts similarly over time suggesting the difference in vegetation impact between these treatments made little difference concerning the potential impacts to lynx (Fig. 4c). Third, Canada lynx tend to avoid silvicultural treatments when a preferred structural stage (e.g., mature, multi-storied forest or advanced regeneration) is abundant in the surrounding landscape, which highlights the importance of considering landscape-level composition as well as recovery time. For instance, in an area with

low amounts of mature forest in the neighborhood, lynx use of recovering silvicultural treatments would be higher versus treatments surrounded by an abundance of mature forest (e.g., Fig. 3b). This scenario captures the importance of post-treatment recovery for Canada lynx when the landscape context is generally composed of lower quality habitat. Overall, these three items emphasize that both the spatial arrangement and composition as well as recovery time are central to balancing silvicultural actions and Canada lynx conservation.

So Holbrook 2017, Holbrook et al. 2018 and Holbrook 2019 attached which fully contradict Forest Plan assumptions that clearcuts/regeneration can be considered useful lynx habitat as early as 20 years post-logging.

Results of a study by Vanbianchi et al., 2017 also conflict with Forest Plan/NRLMD assumptions: "Lynx used burned areas as early as 1 year postfire, which is much earlier than the 2-4 decades postfire previously thought for this predator." The NRLMD erroneously assumes clearcutting/regeneration logging have basically the same temporal effects as stand-replacing fire as far as lynx re-occupancy.

Kosterman, 2014 (please find attached), Vanbianchi et al., 2017 and Holbrook, et al., 2018, Holbrook 2019 demonstrate that Forest Plan direction is not adequate for lynx viability and recovery, as the FS assumes. Holbrook 2019 such all lynx habitat must be surveyed. You have not done this.

Has the SNF removed any lynx analysis units (LAUs) without taking public comment?

Please withdraw the draft EA and write a supplement EA or an EIS that fully complies with the law and analyzes the cumulative effect of clearcutting on grizzly bears, lynx, whitebark pine, wolverine, monarch butterflies, goshawks, and all native fish and wildlife in the Wind River Ranger District or choose the No Action alternative. Also the revised Forest Plan must be amended to incorporate habitat protections standards for lynx and whitebark pine.

The FS approval and implementation of the NRLMD and the revised SNF Forest Plan is arbitrary and capricious, violates NEPA's hard look requirement and scientific integrity mandate and fails to apply the best available science necessary to conserve lynx. The NRLMD or the revised BDNF Forest Plan contain no protection or standard for conservation of winter lynx habitat (old growth forests).

The EA doesn't disclose if the FS conducted lynx occurrence surveys of habitat in the LAUs.

The EA doesn't disclose if surveys target snowshoe hare occurrence data in these stands newly considered unsuitable for lynx. Also, the EA doesn't indicate if the FS surveyed any areas (proposed for logging and/or burning or not) thought to not be lynx habitat based on mapping or stand data were surveyed to confirm unsuitable habitat conditions.

The current science demonstrates that lynx must travel between areas of high hare densities and resist traveling through low cover areas in winter. The EA fails to identify the amount of non-cover or low-cover areas that will be created from the project.

It appears the FS doesn't have a coherent strategy for recovering lynx from their Threatened status, including linking currently populated areas with each other through important linkages such as project area LAUs.

## Weeds

Native plants are the foundation upon which the ecosystems of the Forest are built, providing forage and shelter for all native wildlife, bird and insect species, supporting the natural processes of the landscape, and providing the context within which the public find recreational and spiritual opportunities. All these uses or values of land are hindered or lost by conversion of native vegetation to invasive and noxious plants. The ecological threats posed by noxious weed infestations are so great that a former chief of the Forest Service called the invasion of noxious weeds "devastating" and a "biological disaster." Despite implementation of Forest Service "best management practices" (BMPs), noxious weed infestation on the Forest is getting worse and noxious weeds will likely overtake native plant populations if introduced into areas that are not yet infested. The Forest Service has recognized that the effects of noxious weed invasions may be irreversible. Even if weeds are eliminated with herbicide treatment, they may be replaced by other weeds, not by native plant species.

Invasive plant species, also called noxious weeds, are one of the greatest modern threats to biodiversity on earth. Noxious weeds cause harm because they displace native plants, resulting in a loss of diversity and a change in the structure of a plant community. By removing native vegetative cover, invasive plants like knapweed may increase sediment yield and surface runoff in an ecosystem. As well knapweed may alter organic matter distribution and nutrient through a greater ability to uptake phosphorus over some native species in grasslands. Weed colonization can alter fire behavior by increasing flammability: for example, cheatgrass, a widespread noxious weed on the Forest, cures early and leads to more frequent burning. Weed colonization can also deplete soil nutrients and change the physical structure of soils.

The Forest Service's own management activities are largely responsible for noxious weed infestations; in particular, logging, prescribed burns, and road construction and use create a risk of weed infestations. The introduction of logging equipment into the Forest creates and exacerbates noxious weed infestations.

The removal of trees through logging can also facilitate the establishment of noxious weed infestations because of soil disturbance and the reduction of canopy closure. In general, noxious weeds occur in old clearcuts and forest openings, but are rare in mature and old growth forests. Roads are often the first place new invader weeds are introduced. Vehicle traffic and soil disturbances from road construction and maintenance create ideal establishment conditions for weeds. Roads also provide obvious dispersal corridors. Roadsides throughout the project area are infested with noxious weeds. Once established along roadsides, invasive plants will likely spread into adjacent grasslands and forest openings.

Prescribed burning activities within the analysis area would likely cumulatively contribute to increases in noxious weed distribution and populations. As a disturbance process, fire has the potential to greatly exacerbate infestations of certain noxious weed species, depending on burn severity and habitat type (Fire Effects Information System 2004). Soil disturbance, such as that resulting from low and moderate burn severities from prescribed fire and fire suppression related disturbances (dozer lines, drop spots, etc.), provide optimum conditions for noxious weed invasion. Dry site vegetation types and road corridors are extremely vulnerable, especially where recent ground disturbance (timber management, road construction) has occurred. Units proposed for burning within project area may have closed forest service access roads (jammers) located within units. These units have the highest potential for noxious weed infestation and exacerbation through fire activities. Please provide an alternative that eliminates units that have noxious weeds present on roads within units from fire management proposals.

Please address the ecological, social and aesthetic impact of current noxious weed infestations within the project area. Include an analysis of the impact of the actions proposed by this project on the long and short term spread of current and new noxious weed infestations. What treatment methods will be used to address growing noxious weed problems? What noxious weeds are currently and historically found within the project area? Please include a map of current noxious weed infestations which includes knapweed, Saint Johnswort, cheat grass, bull thistle, Canada thistle, hawkweed, hound's-tongue, oxeye daisy and all other Category 1, Category 2 and Category 3 weeds classified as noxious in the Montana COUNTY NOXIOUS WEED LIST. State-listed Category 2 noxious weed species yellow and orange hawkweeds are recently established (within the last 5 to 10 years) in Montana and are rapidly expanding in established areas. They can invade undisturbed areas where native plant communities are intact. These species can persist in shaded conditions and often grow underneath shrubs making eradication very difficult. Their stoloniferous (growing at the surface or below ground) habit can create dense mats that can persist and spread to densities of 3500 plants per square mile (Thomas and Dale 1975). Are yellow and orange hawkweeds present within the project area?

Please address the cumulative, direct and indirect effects of the proposed project on weed introduction, spread and persistence that includes how weed infestations have been and will be influenced by the following management actions: road construction including new permanent and temporary roads and skid trails proposed within this project; opening and decommissioning of roads represented on forest service maps; ground disturbance and traffic on forest service template roads, mining access routes, and private roads; removal of trees through commercial and pre-commercial logging and understory thinning; and prescribed burns. What open, gated, and decommissioned Forest Service roads within the project area proposed as haul routes have existing noxious weed populations and what methods will be used to assure that noxious weeds are not spread into the proposed action units?

Noxious weeds are not eradicated with single herbicide treatments. A onetime application may kill an individual plant but dormant seeds in the ground can still sprout after herbicide treatment. Thus, herbicides must be used on consistent, repetitive schedules to be effective.

What commitment to a long-term, consistent strategy of application is being proposed for each weed infested area within the proposed action area? What long term monitoring of weed populations is proposed?

When areas treated with herbicides are re-seeded on national forest land, they are usually reseeded with exotic grasses, not native plant species. What native plant restoration activities will be implemented in areas disturbed by the actions proposed in this project? Will disturbed areas including road corridors, skid trails, and burn units be planted or reseeded with native plant species?

The scientific and managerial consensus is that prevention is the most effective way to manage noxious weeds. The Forest Service concedes that preventing the introduction of weeds into un-infested areas is "the most critical component of a weed management program." The Forest Service's national management strategy for noxious weeds also recommends "develop[ing] and implement[ing] forest plan standards . . . ." and recognizes that the cheapest and most effective solution is prevention. Which units within the project area currently have no noxious weed populations within their boundaries? What minimum standards are in the SNF Forest Plan to address noxious weed infestations? Please include an alternative in the DEIS that includes land management standards that will prevent new weed infestations by addressing the causes of weed infestation. The failure to include preventive standards violates NFMA because the Forest Service is not ensuring the protection of soils and native plant communities.

Additionally, the omission of an EIS alternative that includes preventive measures would violate NEPA because the Forest Service would fail to consider a reasonable alternative.

#### Rare Plants

The ESA requires that the Forest Service conserve endangered and threatened species of plants as well as animals. In addition to plants protected under the ESA, the Forest Service identifies species for which population viability is a concern as "sensitive species" designated by the Regional Forester (FSM 2670.44).

The response of each of the sensitive plant species to management activity varies by species, and in some cases, is not fully known. Local native vegetation has evolved with and is adapted to the climate, soils, and natural processes such as fire, insect and disease infestations, and windthrow. Any management or lack of management that causes these natural processes to be altered may have impacts on native vegetation, including threatened and sensitive plants. Herbicide application - intended to eradicate invasive plants - also results in a loss of native plant diversity because herbicides kill native plants as well as invasive plants.

Not all ecosystems or all Rocky Mountain landscapes have experienced the impacts of fire exclusion. In some wilderness areas, where in recent decades natural fires have been allowed to burn, there have not been major shifts in vegetation composition and structure (Keane et al. 2002). In some alpine ecosystems, fire was never an important ecological factor. In some upper subalpine ecosystems, fires were important, but their rate of occurrence was too low to have been significantly altered by the relatively short period of fire suppression (Keane et al. 2002).

For example, the last 70 to 80 years of fire suppression have not had much influence on subalpine landscapes with fire intervals of 200 to several hundred years (Romme and Despain).

Consequently, it is unlikely that fire exclusion has yet to significantly alter stand conditions or forest health within Rocky Mountain sub-alpine ecosystems.

Whitebark pine seedlings, saplings and mature trees, present in subalpine forests proposed for burning, would experience mortality from project activity. Whitebark pine is fire intolerant (thin bark). Fire favors whitebark pine regeneration (through canopy opening and reducing competing vegetation) only in the presence of adequate seed source and dispersal mechanisms (Clarks Nutcracker or humans planting white-bark pine seedlings).

White pine blister rust, an introduced disease, has caused rapid mortality of whitebark pine over the last 30 to 60 years. Keane and Arno (1993) reported that 42 percent of whitebark pine in western Montana had died in the previous 20 years with 89 percent of remaining trees being infected with blister rust. The ability of whitebark pine to reproduce naturally is strongly affected by blister rust infection; the rust kills branches in the upper cone bearing crown, effectively ending seed production.

What surveys have been conducted to determine presence and abundance of whitebark pine re-generation? If whitebark pine seedlings and saplings are present, what measures will be taken to protect them? Please include an alternative that excludes burning in the presence of whitebark pine regeneration (consider 'Daylighting' seedlings and saplings as an alternative restoration method). Will restoration efforts include planting whitebark pine? Will planted seedling be of rust-resistant stock? Is rust resistant stock available? Would enough seedlings be planted to replace whitebark pine lost to fire activities? Have white pine blister rust surveys been accomplished? What is the severity of white pine blister rust in proposed action areas?

Montana is currently experiencing a mountain pine beetle epidemic. Mountain pine beetle prefer large, older whitebark pine, which are the major cone producers. In some areas the few remaining whitebark that show the potential for blister rust resistance are being attacked and killed by mountain pine beetles, thus accelerating the loss of key mature cone-bearing trees.

Whitebark pine seedlings and saplings are very likely present in the subalpine forests proposed for burning and logging. In the absence of fire, this naturally occurring white-bark pine regeneration would continue to function as an important part of the subalpine ecosystem. Since 2005, rust resistant seed sources have been identified in the Northern Rockies (Mahalovich et al 2006). Due to the severity of blister rust infection within the region, natural whitebark pine regeneration in the project area is prospective rust resistant stock.

Although prescribed burning can be useful to reduce areas of high-density subalpine fir and spruce and can create favorable ecological conditions for whitebark pine regeneration and growth, in the absence of sufficient

seed source for natural re-generation maintaining the viability and function of whitebark pine would not be achieved through burning.

Does the Kootenai N.F. have any forest plan biological assessment, biological opinion, incidental take statement, and management direction amendment for whitebark pine?

Planting of rust-resistant seedlings would likely not be sufficient to replace whitebark pine lost to fire activities.

What surveys have been conducted to determine presence and abundance of whitebark pine regeneration? If whitebark pine seedlings and saplings are present, what measures will be taken to protect them? Please include an alternative that excludes burning in the presence of whitebark pine regeneration (consider 'Daylighting' seedlings and saplings as an alternative restoration method). Will restoration efforts include planting whitebark pine? Will planted seedling be of rust-resistant stock? Is rust-resistant stock available? Would enough seedlings be planted to replace whitebark pine lost to fire activities? Have white pine blister rust surveys been accomplished? What is the severity of white pine blister rust in proposed action areas?

For whitebark pine, spring or fall burning may kill seedlings susceptible to fire. For mature whitebark pine trees, the bark is relatively thin compared to other species such as ponderosa pine and susceptible to scorching from fire. Fires that approach the tree trunks may scorch the bark, diminishing the bark's protective properties from other stressors. Depending on the fireline intensity and residence time of lethal temperatures, the heat from the fire may also penetrate the bark, killing the underlying cambium layer. Harm to the bark and cambium may reduce individual tree vigor and also increase susceptibility to infections such as white pine blister rust or infestations by the mountain pine beetle. Whitebark pine seed banks and fine roots may also be impacted should fire move through an area when fuels and soil moisture is conducive to longer residence time of lethal temperatures. Seeds are buried by Clark's nutcrackers generally within one inch of the soil surface and may be susceptible to longer residence time of lethal temperatures. Fine roots located near the soil surface serve as the primary water absorbing roots for trees and may be harmed or killed with longer residence times of lethal temperatures when soil moisture is low which would lead to an increase in the penetration depth of lethal temperatures. In general, the proposed prescription would attempt to achieve a low severity surface fire in which shrubs, needle cast and upper duff layers would be consumed. In some instances, including dense stands in which commercial or non-commercial thinning is not feasible, higher severity fire effects may be preferred to achieve the desired condition for those forested stands. In the long term, broadcast burning in the vicinity of living whitebark pine stands may improve the habitat suitability for seed caching by Clark's nutcracker; seed germination; and whitebark pine seedling establishment. Clark's nutcrackers prefer to cache seeds in recently burned areas as fire removes understory plants and creates soil surfaces that are easier to penetrate for seed caching. In addition, in the long term, broadcast burning may reduce the vigor of other species that would compete with whitebark pine seedlings for sunlight, soil water, and nutrients."

Whitebark pine are now a threatened species and the project is in violation of the ESA.

On December 2, 2020, the U.S. Fish and Wildlife Service issued a rule proposing to list whitebark pine (*Pinus*

albicaulis) under the Endangered Species Act. The Sage Hen Project area includes whitebark pine. The whitebark pine present in the project area represents a major source within the larger

geographic area. The Project proposes tree cutting and burning across thousands of acres where whitebark pine may be present. Regardless of whether individual activities are intended to impact whitebark pine, whitebark pine may be affected by damage from equipment and equipment trails, cutting, soil compaction and disturbance, mortality from prescribed burning, scorching from jackpot burning, trampling of seedlings and saplings, and removal of necessary microclimates and nursery trees needed for sapling survival. Additionally, hundreds of acres of whitebark pine habitat manipulation are proposed for the Project, including intentionally cutting and burning Whitebark pine trees. No discussion on the success rate of natural regeneration under these conditions is provided. No discussion of the success rate of planting seedlings in clearcuts is provided.

The Forest Service admits that whitebark pine is known to be present in the area and that the Project "may impact individuals. . . ." The Forest Service further admits: "some adverse impacts are possible." The Forest Service further admits that "implementation of the project may cause incidental loss of whitebark pine seedlings and saplings..... "

Crucially, the Forest Service does not disclose or address the results of its only long-term study on the effects of tree cutting and burning on whitebark pine. This study, named "Restoring Whitebark Pine Ecosystems," included prescribed fire, thinning, selection cuttings, and fuel enhancement cuttings on multiple different sites. The results were that "[a]s with all the other study results, there was very little whitebark pine regeneration observed on these plots." See U.S. Forest Service, General Technical Report RMRS-GTR-232 (January 2010). More specifically: "the whitebark pine regeneration that was expected to result from this [seed] caching [in new openings] has not yet materialized. Nearly all sites contain very few or no whitebark pine seedlings." Thus, even ten years after cutting and burning, regeneration was "marginal." Moreover, as the Forest Service notes on its website: "All burn treatments resulted in high mortality in both whitebark pine and subalpine fir (over 40%)."

Accordingly, the only proven method of restoration of whitebark pine is planting: "Manual planting of whitebark pine seedlings is required to adequately restore these sites."

Please find attached "Restoring Whitebark Pine Ecosystems in the Face of Climate Change

Robert E. Keane, Lisa M. Holsinger, Mary F. Mahalovich, and Diana F. Tomback" and "Restoring Whitebark Pine Forests of the Northern Rocky Mountains, USA Robert E. Keane and Russell A. Parsons."

Please formally consult with the FWS on the impact of this project on lynx, lynx critical habitat, whitebark pine, monarch butterflies, and grizzly bears.

Please disclose if the project is meeting:

1. Forest Plan Standard 3 - Hiding Cover,
2. Forest Plan Standard 3 - Thermal Cover,
3. Forest Plan Standard 4a - Open Road Density & Hiding Cover,
4. Habitat Effectiveness,
5. Hillis Elk Security at Elk Herd Unit level (i.e., including all lands), and
6. Hillis-derived Elk Security at Elk Analysis Unit level (i.e., lands within National Forest boundary).

Total number of elk is not a correct measure of whether or not adequate secure big game habitat is available on Forest Service lands: "This is inappropriate because the correct measures of big game security are annual bull survival rates and the degree to which big game are retained on public land during the fall hunting season."

Please disclose or address the displacement of elk from public land to private land during hunting season due to inadequate security habitat on National Forests.

WY Game and Fish recommends that land managers provide enough secure habitat during fall to meet annual bull survival objectives while maintaining general bull harvest opportunity. . .

In contrast, the number of elk that spend the majority of the year on some nearby private lands has increased dramatically between 1986 and 2013.

Are you planning on issuing any amendments to the Forest Plan for this project. If so what?

The Wyoming Department of Game and Fish has indicated that there is a serious problem with elk being displaced from insecure National Forest lands onto private land during hunting season. Repeatedly exempting logging and roading projects from the only quantitative limits on logging and roading on this National Forest exacerbates this elk displacement problem and (a) results in a failure to comply with Forest Plan objectives and goals to maintain elk habitat and hunter opportunity, (b) results in a major change to standards and guidelines intended to maintain elk habitat and hunter opportunity, (c) significantly limits hunter opportunity on this Forest, and (d) affects a large portion of this National Forest that is reasonably available to the public for hunting.

For these reasons, the Forest Service's practice of routinely exempting projects from Standards 3 and 4a amounts to a significant change to the Forest Plan, which requires analysis under 36

C.F.R. [sect]219.10 (f) and 36 C.F.R. [sect]219.12.

Will the Green Union project log aspen stands? If so, will the project also provide protection for aspen stands from livestock browsing.

The agency is violating the NEPA by promoting fuel reduction projects as protection of the public from fire, when this is actually a very unlikely event; the probability of a given fuel break to actually have a fire in it before the fuel reduction benefits are lost with conifer regeneration are extremely remote; forest dry-ing and increased wind

speeds in thinned forests may increase, not reduce, the risk of fire.

The agency is violating the NEPA by providing false reasons for logging to the public by claiming that insects and disease in forest stands are detrimental to the forest by reducing stand vigor (health) and increasing fire risk. There is no current science that demonstrates that insects and disease are bad for wildlife, including dwarf mistletoe, or that these increase the risk of fire once red needles have fallen.

The agency is violating the NEPA by claiming that logging public lands will protect resource values (homes) on private land.

The scoping notice states:

#### Fire and Fuels Resource

- \* Decrease wildfire impacts on resource values and private land through hazardous fuels reduction activities on public lands.
- \* Reduce fuels in all layers so that expected wildfire behavior is modified to a lower intensity allowing for safe and effective fire suppression.
- \* Create, enhance, and maintain fuel breaks where feasible.

Please see the attached paper by Baker et al. 2023. This landmark study found a pattern of "Falsification of the Scientific Record" in government-funded wildfire studies.

This unprecedented study was published in the peer-reviewed journal *Fire*, exposing a broad pattern of scientific misrepresentations and omissions that have caused a "falsification of the scientific record" in recent forest and wildfire studies funded or authored by the U.S. Forest Service with regard to dry forests of the western U.S. Forest Service related articles have presented a falsified narrative that historical forests had low tree densities and were dominated by low-severity fires, using this narrative to advocate for its current forest management and wildfire policies.

However, the new study comprehensively documents that a vast body of scientific evidence in peer-reviewed studies that have directly refuted and discredited this narrative were either misrepresented or omitted by agency publications. The corrected scientific record, based on all of the evidence, shows that historical forests were highly variable in tree density, and included "open" forests as well as many dense forests. Further, historical wildfire severity was mixed and naturally included a substantial component of high-severity fire, which creates essential snag forest habitat for diverse native wildlife species, rivaling old-growth forests.

These findings have profound implications for climate mitigation and community safety, as current forest policies that are driven by the distorted narrative result in forest management policies that reduce forest carbon

and increase carbon emissions, while diverting scarce federal resources from proven community wildfire safety measures like home hardening, defensible space pruning, and evacuation assistance.

"Forest policy must be informed by sound science but, unfortunately, the public has been receiving a biased and inaccurate presentation of the facts about forest density and wildfires from government agencies," said Dr. William Baker in their press release announcing the publication of their paper.

"The forest management policies being driven by this falsified scientific narrative are often making wildfires spread faster and more intensely toward communities, rather than helping communities become fire-safe," said Dr. Chad Hanson, research ecologist with the John Muir Project in the same press release. "We need thinning of small trees adjacent to homes, not back-country management."

"The falsified narrative from government studies is leading to inappropriate forest policies that promote removal of mature, fire-resistant trees in older forests, which causes increased carbon emissions and in the long-run contributes to more fires" said, Dr. Dominick A. DellaSala, Chief Scientist, Wild Heritage, a Project of Earth Island Institute concluded in the press release.

The project is therefore in violation of NEPA, NFMA and the APA .

Please see the following article:

Montana researchers urge towns to focus on wildfire preparation

<https://missoulacurrent.com/research-wildfire-preparation/>

Laura Lundquist

(Missoula Current) For more than a decade, a small group of scientists have been trying to convince people that fireproofing their homes is far more effective than logging the forest when it comes to surviving wildfire. But few people are listening.

In mid-December, six researchers published a paper in the Proceedings of the National Academy of Sciences journal warning that communities across the nation, but particularly those in the West, aren't prepared to survive an urban conflagration such as the one that devastated Lahaina, Hawaii, in August.

The paper, titled "Wildland-urban fire disasters aren't actually a wildfire problem," points out that, since 2016, communities from Lahaina to Gatlinburg, Tenn., that have lost hundred of homes to fires have certain things in common: the fires occurred under extreme weather conditions - high winds and persistent drought - and most of the structures weren't fire-resistant.

"These problem fires were defined as an issue of wildfires that involved houses. In reality, they are urban fires initiated by wildfires. That's an important distinction - and one that has big repercussions for how we prepare ourselves for future fires," the authors wrote.

The authors included three researchers from the Forest Science and Fire Sciences laboratories of the U.S. Forest Service Rocky Mountain Research Station in Missoula and one from Headwaters Economics in Bozeman.

In a 2014 paper in the Proceedings of the National Academy of Science, some of the same authors developed a community risk assessment that put the focus on improving the security of individual homes in a community, not the forest around them.

The emphasis is placed on modifying the house and the home ignition zone, a region within 100 feet of a house where debris and vegetation should be eliminated or minimized to reduce the chance of fire getting close to the house.

The reason that urban conflagrations begin and spread is because wind pushes embers and heat from one unprotected building to another, overwhelming fire departments that normally train to fight fire in just one building. Conditions are made worse when buildings are close together, because radiant heat becomes a bigger factor, spreading fire quicker.

"Reducing the likelihood that a home will ignite interrupts the disaster sequence by enabling effective structure protection.

New construction siting, design, construction materials, and landscaping requirements should take wildfire potential into account," the authors wrote in the December paper.

One of the paper's authors, Jack Cohen, is a fire-behavior analyst and heat transfer engineer who has spent 40 years investigating wildfires, particularly those that are linked to incidents where hundreds of homes burned. He has spent at least the past decade writing papers and giving talks about the need to focus on making homes less susceptible to wildfires, which are a natural process, especially in the arid West.

When asked why the researchers decided to submit the recent article that seeks to drum home points they already promoted a decade ago, Cohen said cities and agencies have done very little during that time period to put their recommendations into place.

"What prompted us this time was the Lahaina urban conflagration that was associated with a grassfire. It may be a repeated message on our part, but it's not being received very well. Not much has changed," Cohen said. "The federal and state agencies still don't get it - they're still defining the problem as a wildfire control problem."

Since the 2014 paper, Cohen and other researchers have had to just watch as town after town has burned terribly but predictably, as if no one has read their research. In Gatlinburg and Pigeon Forge, Tenn., 2,460 buildings burned in a 2016 fire; in 2018, the Camp Fire led to the loss of almost 19,000 buildings in Paradise, Calif.; in December 2021, 1,084 buildings burned in Superior and Louisville, Colo. from a grass fire; and in November 2021, a grassfire sparked fires in 23 homes in Denton, Mont.

Each wildfire had very little connection to most of the burning buildings, Cohen said. A wildfire is the source of initial ignition, but from that point on, it's a series of structure fires that lead to more structure fires. For example, with the Four Mile Canyon Fire in Boulder, Colo., the state of Colorado and the Forest Service had completed a number of fuel treatments nearby that they touted as protective. But high winds carried fire brands to ignite the houses far from the fire. Cohen found that while 168 houses burned, a lot of vegetation around the houses didn't, "so the wildfire didn't sweep through town."

"In the past five years, a number of incidents with more than 100 houses burning have been initiated by grass fires, which burn quickly. The grass fires pass through and are gone while the community continued to burn," Cohen said. "What I've found, particularly over the past five or six years, is that extreme wildfire is not dependent on closed-canopy conifers that produce big flames. The only time these urban disasters occur is under extreme conditions. That typically means it's very windy."

Nothing about the Lahaina Fire surprised Cohen. Not even the overblown claims that a wildfire "roared through and destroyed the town." Again, the wildfire was over before the town really started to burn. The fire started as a grassfire fanned by high winds, and had Lahaina not been there, the fire would have burned through the buffel grass and guinea grass within a matter of minutes before it died out on the beach. But Lahaina was there, a high-density community with several blocks of multi-story, largely-connected wooden structures.

That configuration caused buildings to catch fire either due to burning embers flying from other buildings or from catching fire due to the overwhelming heat from nearby buildings.

"The ignition initiated where the grassfire came down, and that was it - it was a conflagration," Cohen said. "You don't want to be in a high-density community when you can't control the fire. Thirteen of the 26 fatalities in the

1991 Oakland Hills Fire occurred in the street when two-story buildings were burning on both sides of the street and the road became blocked. The heat was untenable."

One house in Lahaina stood untouched and was dubbed "the miracle house." But Cohen said it was just a good example of the points he and his fellow authors have been trying to communicate about defensible space and being fire-adapted. The owners had recently renovated the house with a nonflammable roof. It had wood walls, but the nearest building was about 30 feet away - far enough to prevent radiant heat from starting a fire - and there was little debris on the grounds or the house to actively spread the fire.

"The home ignition zone works," Cohen said. "The home ignition zone came out of the modeling I did and then the crown fire experiments I did with wood walls to show the distance, the proximity required to produce an ignition was realistic. At the same time, California was cutting 300-foot clearances around communities, which means nothing to (airborne) burning embers, but it's way over (what's required) for radiant heat exposure."

Cohen and his colleagues hope their latest paper prompts more action from local governments. Cohen is hoping Missoula County can do a better job when it updates its Wildfire Protection Plan in the near future.

But more than likely, Cohen said, they'll be writing a similar paper in another few years, trying to make politicians and the public understand. It doesn't help that they're fighting some in their own agency, the Forest Service, who insist that logging, not home modification, will save communities.

"Fire is inevitable. But nobody's figuring it out," Cohen said. "We're starting from the presumption that it's wildfire that spreads through a community that lays it to waste. We even have the agencies responding in that fashion by being obsessed with this notion of wildfire control. So they do fuel treatments to have safe firefighting. That's not only counter ecologically, it doesn't work."

Contact reporter Laura Lundquist at [lundquist@missoulacurrent.com](mailto:lundquist@missoulacurrent.com).

Please find, "Wildland-urban fire disasters aren't actually a wildfire problem," by Calkin et al. 2023 attached.

The project area should be within 100 feet of homes not on Forest Service and BLM lands unless a home is within 100 feet of Forest Service and BLM lands. The purpose and need are not based on the best available science and is in violation of NEPA, NFMA and the APA.

Please develop an alternative that follow the recommendations of Calkin et al. 2023.

The agency is violating the NEPA by using vague, unmeasurable terms to rationalize the proposed logging to the public.

How can the public measure "resiliency?" What are the specific criteria used to define resiliency, and what are the ratings for each proposed logging unit before and after treatment? How is the risk of fire as affected by the project being measured so that the public can understand whether or not this will be effective? How is forest health to be measured so that the public can see that this is a valid management strategy? What specifically constitutes a diversity of age classes, how is this to be measured, and how are proposed changes measured as per diversity? How are diversity measures related to wildlife (why is diversity needed for what species)? If the reasons for logging cannot be clearly identified and measured for the public, the agency is not meeting the NEPA requirements for transparency.

The agency will violate the Forest Plan by logging riparian areas; almost all wildlife species will be harmed by this treatment.

The agency will violate the NFMA by failing to ensure that old growth forests are well-distributed across the landscape with a Forest Plan amendment; although not provided in the scoping document for public comment, the agency is amending the Forest Plan to allow logging of old growth rather than preserving it.

Please include an easily understandable accounting of all costs for the various types of treatments, including burning. For commercial logging, fuels reduction, and prescribed burning, we would like to know what the estimated cost is "per acre" for that particular treatment. We would also like to know the costs for construction of new temporary roads, reconstruction of existing roads, and road obliteration and/or decommissioning per mile of road.

THE AGENCIES MUST REINITIATE

CONSULTATION ON THE NORTHERN ROCKIES LYNX MANAGEMENT DIRECTION.

The Northern Rockies Lynx Management Direction is inadequate to ensure conservation and recovery of lynx. The amendments fail to use the best available science on necessary lynx habitat elements, including but not limited to, failing to include standards that protect key winter habitat.

The Endangered Species Act requires the FS to insure that the GRLA project is not likely to result in the destruction or adverse modification of critical habitat. 16 U.S.C. [sect]1536(a) (2). Activities that may destroy or adversely modify critical habitat are those that alter the physical and biological features to an extent that appreciably reduces the conservation value of critical habitat for lynx. 74 Fed. Reg. 8644. The Northern Rockies Lynx Management Direction (NRLMD) as applied in the project violates the ESA by failing to use the best

available science to insure no adverse modification of critical habitat. The NRLMD carves out exemptions from Veg Standards S1, S2, S5, and S6. In particular, fuel treatment projects may occur in the WUI even though they will not meet standards Veg S1, S2, S5, or S6, provided they do not occur on more than 6% of lynx habitat on each National Forest. Allowing the agency to destroy or adversely modify any lynx critical habitat has the potential to appreciably reduce the conservation value of such habitat. The agency cannot simply set a cap at 6% forest-wide without looking at the individual characteristics of each LAU to determine whether the project has the potential to appreciably reduce the conservation value. The ESA requires the use of the best available science at the site-specific level. It does not allow the agencies to make a gross determination that allowing lynx critical habitat to be destroyed forest-wide while not appreciably reduce the conservation value.

The FS violated NEPA by applying the above-mentioned exception without analyzing the impacts to lynx in the individual LAUs. The Project violates the NFMA by failing to insure the viability of lynx. According to the 1982 NFMA regulations, fish and wildlife must be managed to maintain viable populations of Canada lynx in the planning area. 36 C.F.R. 219.19. The FS has not shown that lynx will be well distributed in the planning area. The FS has not addressed how the project's adverse modification of denning and foraging habitat will impact distribution. This is important because the agency readily admits that the LAUs already contain a "relatively large percentage of unsuitable habitat."

The national forests subject to this new direction will provide habitat to maintain a viable population of lynx in the northern Rockies by maintaining the current distribution of occupied lynx habitat, and maintaining or enhancing the quality of that habitat.

Has the SNF removed any lynx analysis units (LAUs) without going through NEPA? If so please disclose where these LAUs were and why you violated NEPA by removing the LAUs without taking public comment?

The FS cannot insure species viability here without addressing the impacts to the already low amount of suitable habitat. By cutting in denning and foraging habitat, the agency will not be "maintaining or enhancing the quality of the habitat."

This project is in Canada lynx habitat. In order to meet the requirements of the FS/USFWS Conservation Agreement, the FS agreed to insure that all project activities are consistent with the Lynx Conservation Assessment and Strategy (LCAS) and the requirements of protecting lynx critical habitat. The FS did not do so with its project analysis. This project will adversely affect lynx critical habitat in violation of the Endangered Species Act. The BA/BE needs to be rewritten to reflect this information to determine if this project will adversely modify proposed critical habitat for lynx and if so conference with USFWS.

The SNF is home to the Canada lynx, listed as a Threatened species under the Endangered Species Act (ESA). In December 1999, the Forest Service and Bureau of Land Management completed their "Biological Assessment Of The Effects Of National Forest Land And Resource Management Plans And Bureau Of Land Management Land Use Plans On Canada Lynx" (Programmatic Lynx BA). The Programmatic Lynx BA concluded that the current programmatic land management plans "may affect, and are likely to adversely

affect, the subject population of Canada lynx."

The Lynx BA team recommended amending or revising Forest Plans to incorporate conservation measures that would reduce or eliminate the identified adverse effects on lynx. The Programmatic Lynx BA's determination means that Forest Plan implementation is a "taking" of lynx, and makes Section 7 formal consultation on the Kootenai Forest Plan mandatory, before actions such as the proposed project are approved.

Continued implementation of the Forest Plan constitutes a "taking" of the lynx. Such taking can only be authorized with an incidental take statement, issued as part of a Biological Opinion (B.O.) during of Section 7 consultation. The SNF must incorporate terms and conditions from a programmatic B.O. into a Forest Plan amendment or revision before projects affecting lynx habitat, such as this one, can be authorized.

The Programmatic Lynx BA's "likely to adversely affect" conclusion was based upon the following rationale. Plans within the Northern Rockies:

- \* Generally direct an aggressive fire suppression strategy within developmental land allocations. ...this strategy may be contributing to a risk of adversely affecting the lynx by limiting the availability of foraging habitat within these areas.
- \* Allow levels of human access via forest roads that may present a risk of incidental trapping or shooting of lynx or access by other competing carnivores. The risk of road-related adverse effects is primarily a winter season issue.
- \* Are weak in providing guidance for new or existing recreation developments. Therefore, these activities may contribute to a risk of adverse effects to lynx.
- \* Allow both mechanized and non-mechanized recreation that may contribute to a risk of adverse effects to lynx. The potential effects occur by allowing compacted snow trails and plowed roads which may facilitate the movements of lynx competitors and predators.
- \* Provide weak direction for maintaining habitat connectivity within naturally or artificially fragmented landscapes. Plans within all geographic areas lack direction for coordinating construction of highways and other movement barriers with other responsible agencies. These factors may be contributing to a risk of adverse effects to lynx.
- \* Are weak in providing direction for coordinating management activities with adjacent landowners and other agencies to assure consistent management of lynx habitat across the landscape. This may contribute to a risk of adverse effects to lynx.
- \* Fail to provide direction for monitoring of lynx, snowshoe hares, and their habitats. While failure to monitor does not directly result in adverse effects, it makes the detection and assessment of adverse effects from other management activities difficult or impossible to attain.
- \* Forest management has resulted in a reduction of the area in which natural ecological processes were historically allowed to operate, thereby increasing the area potentially affected by known risk factors to lynx. The Plans have continued this trend. The Plans have also continued the process of fragmenting habitat and reducing its quality and quantity. Consequently, plans may risk adversely affecting lynx by potentially contributing to a reduction in the geographic range of the species.
- \* The BA team recommends amending or revising the Plans to incorporate conservation measures that would reduce or eliminate the identified adverse effects to lynx. The programmatic conservation measures listed in the Canada Lynx Conservation Assessment and Strategy (LCAS) should be considered in this regard, once finalized. (Programmatic Lynx BA, at 4.)

The Programmatic Lynx BA notes that the LCAS identifies the following risk factors to lynx in this geographic area:

\*

- \* Timber harvest and pre-commercial thinning that reduce denning or foraging habitat or converts habitat to less desirable tree species
- \* Fire exclusion that changes the vegetation mosaic maintained by natural disturbance processes
- \* Grazing by domestic livestock that reduces forage for lynx prey

How many road closure violations have been found in the Wind River Ranger District in the last 5 years?

It is fair to assume that there are many more violations that regularly occur and are not witnessed and reported. It is also fair to assume that you have made no effort to request this available information from your own law enforcement officers, much less incorporate it into your analysis. Considering your own admissions that road density is the primary factor that degrades elk and grizzly habitat, this is a material and significant omission from your analysis- all of your ORD and HE calculations are wrong without this information.

The veracity of the FS's inventory of system and nonsystem ("undetermined" or "unauthorized") roads is at issue here also. This is partly because the FS basically turns a blind eye to the situation with insufficient commitment to monitoring, and also because violations are not always remedied in a timely manner.

The Katkee Fuels project would violate the Forest Plan/Access standards, a violation of NFMA because of road closure violations.

Please disclose how many years the existing core areas have provided the habitat benefits assumed under the Forest Plan. As pointed out, some has been lost (due to "private infrastructure development") and we're not told of other likely and foreseeable reductions.

Please take a hard look at road closure violations.

Additionally, your emphasis on elk populations across entire hunting districts is disingenuous and has little relevance to whether you are meeting your Forest Plan obligations to maintain sufficient elk habitat on National Forest lands. As you note, the Forest Plan estimated that 70% of elk were taken on National Forest lands in 1986. What percentage of elk are currently taken on National Forest lands?

Have you asked Montana Department of Fish, Wildlife and Parks for this information? Any honest biologist would admit that high elk population numbers do not indicate that you are appropriately managing National Forest elk habitat; to the contrary, high elk numbers indicate that you are so poorly managing elk habitat on National Forest lands that elk are being displaced to private lands where hunting is limited or prohibited. Your own Forest Service guidance document, Christensen et al 1993 states: "Reducing habitat effectiveness should never be considered as a means of controlling elk populations."

What is the existing condition of linear motorized route density on National Forest System lands in the action area and what would it increase to during implementation.

Do your open road density calculations include the "non-system" i.e. illegal roads in the Project area?

Do your open road density calculations include all of the recurring illegal road use documented in your own law enforcement incident reports?

Has the SNF closed or obliterated all roads that were promised to be closed or obliterated in the your Travel Plans in the Wind River Ranger District? Or, are you still waiting for funds to close or obliterate those roads? This distinction matters because you cannot honestly claim that you are meeting road density standards promised by the Travel Plan if you have not yet completed the road closures/obliterations promised by the Travel Plan. Furthermore, as noted above, you have a major problem with recurring, chronic violations of the road closures created by the Travel Plan, which means that your assumptions in the Travel Plan that all closures would be effective has proven false. For this reason, you cannot tie to the analysis in the Travel Plan because it is invalid. You must either complete new NEPA analysis for the Travel Plan on this issue or provide that new analysis in the NEPA analysis for this Project. Either way, you must update your open road density calculations to include all roads receiving illegal use.

Christensen et al (1993) states: "Any motorized vehicle use on roads will reduce habitat effectiveness. Recognize and deal with all forms of motorized vehicles and all uses, including administrative use." Please disclose this to the public and stop representing that roads closed to the public should not be included in habitat effectiveness calculations. The facts that (a) you are constructing or reconstructing over 40 miles of road for this project, (b) you have problems with recurring illegal use, and (c) you already admit that you found another 25 miles of illegal roads in the project area that you have not committed to obliterating, means that your conclusion that this Project will have no effect on open road density or habitat effectiveness is implausible to the point of being disingenuous. You cannot exclude these roads simply because you say they are closed to the public. Every road receiving motorized use must be included in the HE calculation. You must consider all of this road use in order to take a hard look that is fully and fairly informed regarding habitat effectiveness. In the very least you must add in all "non-system" roads, i.e. illegal roads, as well as recurring illegal road use (violations) in your ORD calculations. Also, as a side note, your calculations in Christensen et al 1993 finds: "Areas where habitat effectiveness is retained at lower than 50 percent must be recognized as making only minor contributions to elk management goals. If habitat effectiveness is not important, don't fake it. Just admit up front that elk are not a consideration."

Will the project comply with Forest Plan Management Area C Goal states: "Maintain or enhance existing elk habitat by maximizing habitat effectiveness as a primary management objective. Emphasis will also be directed toward management of indigenous wildlife species. Commodity resource management will be practiced where it is compatible with these wildlife management objectives." Also - MA C Standard: "Habitat effectiveness will be positively managed through road management and other necessary controls on resource activities." Also - "Elk habitat effectiveness will be maintained." Please demonstrate that the project will comply with all of these provisions for all of the above-stated reasons.

Do the action alternatives comply with PACFISH-INFISH?

Are you meeting the INFISH Riparian Management Objectives for temperature, pool frequency, and sediment?

The best available science shows that roads are detrimental to aquatic habitat and logging in riparian areas is not restoration.

Fish evolved with fire, they did not evolve with roads and logging.

Please completely analyze the impacts to native fish habitat. What is the standard for sediment in the Forest Plan? Sediment is one of the key factors impacting water quality and fish habitat. [See USFWS 2010]

The Forest Plan and the Green Union project weakens native fish habitat protections by allowing new roadbuilding throughout native fish habitat without meaningful reclamation of existing roads to compensate for the new road construction.

New roadbuilding proposed in the Green Union project without meaningful reclamation to ensure no net increase in the road system threatens stream sedimentation that will degrade native fish habitat. Surface runoff on roads, including roads unused by motorized vehicles, threatens to cause sediment discharge to nearby waterbodies, including native fish streams. Culverts inevitably clog and fail, causing the affected stream to run over the roadbed with associated erosion and sedimentation. Such sedimentation threatens to degrade stream conditions and harm native fish, which require very cold and clean water to survive and reproduce.

The proposed action will spread weeds due to existing weed infestations, potential soil disturbance, roads, private lands, activity timing, logging, and moving equipment through infested areas. Weeds are already prolific in the project area, washing equipment doesn't work when the equipment then moves through infestations

and spreads across the project area because of soil disturbed by roads and logging. Are the design features adequate to ensure the project doesn't spread weeds?

With all the existing weed infestations and the high risk of weed proliferation there is no analysis or even discussion of how this impacts wildlife forage. Weeds are displacing native vegetation that wildlife need for food.

Connectivity for wildlife is fragmented in the project area and this project will exacerbate that situation with oversized clearcuts and more roads. This is already impacting small mammals that are prey for larger animals and birds yet there is no analysis of how this impacts wildlife foraging.

The project logs and builds roads through old growth forest habitat yet analysis of the impacts to wildlife is nil, a mere two paragraphs for goshawk.

It is time to give this area a rest. If landowners are concerned about fire then the best thing they can do is thin and manage their own property.

A new study by Dominick A. DellaSala et al. found that re-viewed 1500 wildfires between 1984 and 2014 found that actively managed forests had the highest level of fire severity. Please find DellaSala et al. attached. While those forests in protected areas burned, on average, had the lowest level of fire severity. In other words, the best way to reduce severe fires is to protect homes from the Home out in the Home Ignition Zone, not log forests outside the home ignition zone, therefore the purpose and need of the Green Union is not valid.

The best available science shows that Commercial Logging does not reduce the threat of Forest Fires. What best available science supports the action alternatives?

Please find Schoennagel et al (2004) attached. Schoennagel states: "we are concerned that the model of historical fire effects and 20th-century fire suppression in dry ponderosa pine forests is being applied incorrectly across all Rocky Mountain forests, including where it is inappropriate.

Schoennagel et al (2004) states: "High-elevation subalpine forests in the Rocky Mountains typify ecosystems that experience infrequent, high-severity crown fires [ ]. . . The most extensive subalpine forest types are composed of Engelmann spruce (*Picea engelmannii*), subalpine fir (*Abies lasiocarpa*), and lodgepole pine (*Pinus contorta*), all thin-barked trees easily killed by fire. Extensive stand-replacing fires occurred historically at long intervals (i.e., one to many centuries) in subalpine forests, typically in association with infrequent high-pressure blocking systems that promote extremely dry regional climate patterns."

Schoennagel et al (2004) states: "it is unlikely that the short period of fire exclusion has significantly altered the long fire intervals in subalpine forests. Furthermore, large, intense fires burning under dry conditions are very difficult, if not impossible, to suppress, and such fires account for the majority of area burned in subalpine forests.

Schoennagel et al (2004) states: "Moreover, there is no consistent relationship between time elapsed since the last fire and fuel abundance in subalpine forests, further undermining the idea that years of fire suppression have caused unnatural fuel buildup in this forest zone."

Schoennagel et al (2004) states: "No evidence suggests that spruce-fir or lodgepole pine forests have experienced substantial shifts in stand structure over recent decades as a result of fire suppression. Overall, variation in climate rather than in fuels appears to exert the largest influence on the size, timing, and severity of fires in subalpine forests []. We conclude that large, infrequent stand replacing fires are 'business as usual' in this forest type, not an artifact of fire suppression."

Schoennagel et al (2004) states: "Contrary to popular opinion, previous fire suppression, which was consistently effective from about 1950 through 1972, had only a minimal effect on the large fire event in 1988 []. Reconstruction of historical fires indicates that similar large, high-severity fires also occurred in the early 1700s []. Given the historical range of variability of fire regimes in high-elevation subalpine forests, fire behavior in Yellowstone during 1988, although severe, was neither unusual nor surprising."

Schoennagel et al (2004)(emphasis added) states: "Mechanical fuel reduction in subalpine forests would not represent a restoration treatment but rather a departure from the natural range of variability in stand structure."

Schoennagel et al (2004) states: "Given the behavior of fire in Yellowstone in 1988, fuel reduction projects probably will not substantially reduce the frequency, size, or severity of wildfires under extreme weather conditions."

Schoennagel et al (2004) states: [Idquo]The Yellowstone fires in 1988 revealed that variation in fuel conditions, as measured by stand age and density, had only minimal influence on fire behavior. Therefore, we expect fuel-reduction treatments in high-elevation forests to be generally unsuccessful in reducing fire frequency, severity, and size, given the overriding importance of extreme climate in controlling fire regimes in this zone. Logging also will not restore subalpine forests, because they were dense historically and have not changed significantly in response to fire suppression. Thus, fuel-reduction efforts in most Rocky Mountain subalpine forests probably would not effectively mitigate the fire hazard, and these efforts may create new ecological problems by moving the forest structure outside the historic range of variability.[rdquo] Likewise, Brown et al (2004) states: [Idquo]At higher elevations, forests of subalpine fir, Engelmann spruce, mountain hemlock, and lodgepole or whitebark pine predominate. These forests also have long fire return intervals and contain a high proportion of fire sensitive trees. At periods averaging a few hundred years, extreme drought conditions would prime these forests for large, severe fires that would tend to set the forest back to an early successional stage, with a large carry-over of

dead trees as a legacy of snags and logs in the re-generating forest . . . natural ecological dynamics are largely preserved because fire suppression has been effective for less than one natural fire cycle. Thinning for restoration does not appear to be appropriate in these forests. Efforts to manipulate stand structures to reduce fire hazard will not only be of limited effectiveness but may also move systems away from pre-1850 conditions to the detriment of wildlife and water-sheds.[rdquo] [ldquo]Fuel levels may suggest a high fire [lsquo]hazard[rsquo] under conventional assessments, but wildfire risk is typically low in these settings.[rdquo]

Likewise, Graham et al (2004) states: [ldquo]Most important, the fire behavior characteristics are strikingly different for cold (for example, lodgepole pine, Engelmann spruce, subalpine fir), moist (for example, western hemlock, western red cedar, western white pine), and dry forests. Cold and moist forests tend to have long fire-return intervals, but fires that do occur tend to be high-intensity, stand-replacing fires. Dry forests historically had short intervals between fires, but most important, the fires had low to moderate severity.[rdquo] According to Graham et al (2004), thinning may also increase the likelihood of wildfire ignition in the type of forests in this Project area: [ldquo]The probability of ignition is strongly related to fine fuel moisture content, air temperature, the amount of shading of surface fuels, and the occurrence of an ignition source (human or lightning caused) . . . There is generally a warmer, dryer microclimate in more open stands (fig. 9) compared to denser stands. Dense stands (canopy cover) tend to provide more shading of fuels, keeping relative humidity higher and air and fuel temperature lower than in more open stands. Thus, dense stands tend to maintain higher surface fuel moisture contents compared to more open stands. More open stands also tend to allow higher wind speeds that tend to dry fuels compared to dense stands. These factors may increase probability of ignition in some open canopy stands compared to dense canopy stands.[rdquo]

The Forest Plan weakened grizzly bear habitat protections by allowing new roadbuilding throughout the SNF, without meaningful and permanent reclamation of other roads elsewhere in the Forest to compensate for the new road construction.

What is the open and total road density in the Warm Springs Bear Analysis Unit (Bear Analysis Unit)?

What other projects are ongoing or expected in the Warm Springs Bear Analysis Unit (Bear Analysis Unit)?

New roadbuilding in the Forest without meaningful reclamation to ensure no net increase in the road system presents a significant threat to grizzly bears, because motor vehicle users and other people recreating can trespass on the supposedly [ldquo]impassable[rdquo] roads and thus encroach on grizzly bear habitat. Further, even unused roads cause detrimental impacts to grizzly bear survival and reproduction, because grizzly bears are displaced from roaded habitat, regardless of whether the roads receive public or administrative use. However, in concluding that the Forest Plan will not jeopardize the species, FWS[rsquo]s Revised Biological Opinion failed to adequately examine adverse impacts to grizzly bears from unauthorized motorized use on roads closed according to the Forest Plan[rsquo]s weaker closure standards; failed to consider the displacement impacts caused by roads even when they do not receive motorized use; and failed to account for increased roadbuilding enabled by the Forest Service[rsquo]s abandonment of stringent road-reclamation requirements.

Please find attached the paper titled, [ldquo]The importance of natural forest stewardship in adaptation planning in the United States[rdquo] by Faison et al 2023 which found that protecting more forests with natural stewardship is a cost effective way to harness the inherent adaptation and mitigation powers in forests and ensure that they are at their most functional to regulate planetary pro-cesses. Which is the opposite of the purpose and need of this project.

Thank you for your time and consideration of our comments.

Sincerely yours,

Mike Garrity

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Attachments:

Baker et al 2023.pdf

Correlates of Canada Lynx Reproductive Success in Northwestern Mo.pdf

CV-17-30 -GF-BMM.pdf

DellaSala 2022.pdf

Keane 2017.pdf

Keane Parsons2010-1.pdf

WBP FWS memo.pdf

Golladay\_et\_al.\_2016\_Achievable\_future\_conditions\_as\_a\_framework.pdf

Black Ram ORDER - Granting MSJ - 2023-08-17.pdf

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Stevens-Rumann\_et\_al-2018-Ecology\_Letters.pdf

Holbrook et al 2017 Lynx.pdf

Holbrooketal\_2019.pdf

calkin-et-al-2023-wildland-urban-fire-disasters-aren-t-actually-a-wildfire-problem.pdf

Schoennagel\_et\_al\_2004-1.pdf

Faison\_et\_al\_2023.pdf

Six et al 2021 Whitebark Genetics.pdf

Keane 2017.pdf

Keane Parsons2010.pdf

wjaf\_1993\_rapidassess.pdf

Holbrook-et-al-2018.jpg

wjaf\_1993\_rapidassess.pdf

Holbrook-et-al-2018-4.pdf