Friends of the Clearwater
Keeping Idaho's Clearwater Basin Wild
P.O. Box 9241 Moscow, ID 83843 | (208) 882-9755 | friendsoftheclearwater.org

February 14, 2022

Sent via mail and email: appeals-northern-regional-office@usda.gov

Attention: Objection Reviewing Officer
Dead Laundry Objection
USDA Forest Service, Northern Region
26 Fort Missoula Road
Missoula, MT 59804

Re: Dead Laundry Objection

Objection Reviewing Officer:

Pursuant to 36 CFR Part 218, Friends of the Clearwater (FOC), Alliance for the Wild Rockies (AWR), and WildEarth Guardians file this objection to the December 2021 Environmental Assessment and finding of no significant impact (EA) and draft decision notice for the Dead Laundry project (DN). This timber sale is proposed for the North Fork Ranger District of the Clearwater National Forest (a portion of the administratively combined Nez Perce-Clearwater National Forests). The Responsible Official is District Ranger Andrew Skowlund.

Pursuant to Part 218, FOC is the lead objector. Contact person is Jeff Juel, FOC Montana Policy Director jeffjuel@wildrockies.org (509-688-5956).

The DN's selected alternative is the proposed action as described in the EA. The DN states:

> In summary, this decision will:
> 1. Conduct regeneration harvest on up to 3,580 acres. The majority of treatments will maintain and/or re-establish long-lived early seral species by reducing stand densities and addressing insect and disease infestations.
> 2. Conduct landscape fuels treatments on up to 1,351 acres.
> 3. Complete non-commercial fuels activities on up to 640 acres in harvest units to reduce activity fuel and prepare harvested openings for planting.
> 4. Conduct Old Growth Enhancement (OGE) on up to 140 acres.
> 5. Construct approximately 52 miles of temporary roads to facilitate harvest. These roads will be decommissioned after all project activities and (sic) completed.
> 6. Construct up to 12 miles of permanent roads.
> 7. Conduct maintenance/reconstruction as needed to accommodate safe log haul.

The DN also describes the supersized clearcuts it approves:

Figure 2. Dead Laundry Project Openings Over 40 Acres

Opening #	*NEPA Units*	*Opening Acreage*
1	15, 15A	153
2	16, 16B, 16C	178
3	59A	73
4	72, 72A	57
5	19	44
6	71	58
7	99	105
8	73	71
9	20A	64
10	84	87
11	24, 24A, 26A	143
12	26C	79
13	26B	76
14	158	56
15	124, 127, 128, 37A, 37B, 38A, 38B, 68	192
16	55	59
17	56	89
18	46	64
19	48	83
20	92A	65
21	107	89
22	31	61
23	30	432
24	33B, 33C	155
25	109	73
26	34A, 34B, 35, 63	116

The EA states the logging from 2,218 net acres is expected to yield 39.6 million board feet of timber (enough to fill nearly 8,000 log truck loads, based on figures from Oester and Bowers, 2009).

We incorporate our comments on the NPCNF Draft Forest Plan/Draft EIS, because those comments discuss many of the same resource issues raised in this objection. And as of the date of this objection, no Forest Service responses those comments have been published.

AWR participated during the public process as the Northern Rockies Lynx Management Direction (NRLMD) was developed, and we believe the Forest Plan/NRLMD does not consider the best available science. We incorporate the documentation of AWR's participation in the NRLMD public process, within this objection.

We also incorporate the comments and objection by Harry Jageman within this objection.

Attachments, references, and other incorporated documents mentioned in objection statements are included on data disks along with this objection, sent to the Forest Service Objection Reviewing Officer via US mail postmarked on this date.

We request notice of all actions taken regarding the Dead Laundry project, pursuant to 40 C.F.R. § 1506.6. Please email all such notices to the contacts identified below for each organization.

INTRODUCTION

The Final EA states, "A 30-day comment period on the draft EA began on May 28, 2021. 9 comment letters and other reference materials were submitted to the Forest. Comments and reference materials were considered by the Forest in the development of this final EA." Whereas it's common for the Forest Service (FS) to publish a document containing all its written responses to comments on EAs, in this case no such document appears on the project website. When asked for a copy of such a document, the District Ranger replied that we would have to request it under the Freedom of Information Act. So when we emailed the FOIA, the FS's response stated, "Due to the complex nature of your request an additional 10 days may be required. We anticipate a response to you on or before February 11, 2022." Apparently the FS finds it very difficult to simply email it to someone upon request, or better yet place it on the project website at the same time as the draft DN. It's likely the FS hadn't even written responses before we requested them.

Finally, on Friday afternoon, February 4 the FS emailed us its written responses to comments on EA. From our reading of the responses to specific comments, it seems the FS mostly just refers back to the pages in the EA where the FS presented the issue to begin with, or likewise to other documents, some of which are on the website. We get no sense the FS processed our comments or "considered" how they might relate to the issues we commented on. The FS treats the public involvement process as essentially perfunctory.

The Ninth Circuit U.S. Court of Appeals provides a possible explanation for Forest Service non-transparency in a 2006 opinion: "We have noticed a disturbing trend in the [Forest Service's] recent timber-harvesting and timber-sale activities…It has not escaped our notice that the [Forest Service] has a substantial financial interest in the harvesting of timber in the National Forest. We regret to say that in this case, like the others just cited, the [Forest Service] appears to have been more interested in harvesting timber than in complying with our environmental laws." *Earth Island Institute v. United States Forest Service* 442 F.3d 1147 (2006).

So we fully incorporate our EA comments within this objection. Also, we note the FS has not even updated a single specialist's report following the EA comment period, although they are under the heading, "Updated Specialist Reports for Final EA" on the current project website. (See our document, "Same old specialists reports" which is a screenshot of the project website. Also, we notice the FS's response to comments document refers to some apparently mythical modifications of some of their reports.)

Within this objection, we've written all the headings of the sections from our EA comments, to remind that our EA comments are being incorporated. In some cases, we add further text to what we had written previously.

This objection (including the documents it incorporates, e.g. EA comments) explains in detail how the EA analyses are inadequate. The Dead Laundry project is an example of an outmoded world view, one that destroys the natural world in a misguided attempt to "manage" it. At this point, the only way for the FS to **remedy** this situation is for it to withdraw its EA/DN and start over, prepare an Environmental Impact Statement (EIS) if any parts of its Dead Laundry proposal can pass scientific, economic and rational muster. Better, the agency should abandon this proposal altogether.

We look forward to discussing what the FS proposes to do in response to objections, at upcoming objection resolution meeting(s).

ENVIRONMENTAL ASSESSMENT DOES NOT COMPLY WITH NEPA

The purpose and need statement does not conform the letter or the spirit of the National Environmental Policy Act (NEPA). That there is only one action alternative is one problem. NEPA requires a reasonable range of alternatives. The FS has drawn the purpose and need so narrowly that only its action alternative will fit. Because the FS hasn't considered any reasonable alternatives, it violates NEPA.

Suggestions by the public included use of temporary roads instead of new system roads, no new roads, construction of no or far fewer temporary roads, and more road decommissioning. The FS did not adequately consider such alternatives because it believes that the suggested alternatives "would not meet the purpose and need of the project of managing towards desired conditions (DFCs) and objectives identified in the Forest Plan." When referring to desired conditions and objectives identified in the Forest Plan, the FS is cherry-picks those regarding forest vegetation, and in fact uses some not even in the Forest Plan. And, the proposed action would make no progress toward desired conditions for water quality and aquatic habitat.

The alternatives suggested by the public ***are*** in alignment with direction for water quality and aquatic habitat found in the Forest Plan for the Clearwater National Forest (CNF). For example, one of the stated goals is to: "Manage the Forest's fishery streams to achieve optimum levels of fish production by: 1) maintaining high quality habitat in existing high quality streams and, 2) rehabilitating and improving degraded streams on certain developed portions of the Forest; and then maintaining the optimum levels." A related goal is to: "Manage watersheds, soil resources, and streams to maintain high quality water that meets or exceeds State and Federal water quality standards, and to protect all beneficial uses of the water, which include fisheries, water-based recreation, and public water supplies." Finally, an objective of the plan is to: "Restore selected, presently degraded fish habitat through habitat improvement projects designed to achieve stated objectives for particular streams by 1997." Actions to improve water quality and aquatic habitat are clearly in alignment with the Forest Plan, and its direction for these resources should be on equal footing desired conditions for forest vegetation.

NATIONAL ENVIRONMENTAL POLICY ACT REGULATIONS

AN ENVIRONMENTAL IMPACT STATEMENT IS REQUIRED

Because the project may have a significant impact, the Forest Service must prepare an environmental impact statement.

From the dimensions of impacted acreage alone, the proposed action will likely have a significant impact on the environment and thus the FS must prepare an Environmental Impact Statement (EIS) for this project. The Council for Environmental Quality (CEQ) regulations require agencies to prepare an EIS if a project may significantly affect the human environment. CEQ regulations define significance in terms of context and intensity, which includes the scope of beneficial and adverse impacts, unique characteristics of the geographic area, degree of controversy, degree of uncertainty, the degree to which an action may affect species listed or critical habitat designated under the Endangered Species Act, and whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment. 40 C.F.R. § 1508.27 (defining "significantly"). This project may significantly affect the human environment because, inter alia, it:

- Will cause significant impacts, both beneficial and adverse. Specifically, the massive amount of regeneration harvest (effectively clearcuts) across 3,580 acres requires Regional Forester approval since a total of 26 harvest units will exceed the 40-acre limit. Eight exceed 100 acres, and the largest would result in a staggering 432-acre clearcut. Any suggestion that such actions do not constitute significant adverse impacts would be arbitrary and capricious, particularly in light of the routine authorizations issued by Regional Forester Marten, as documented by Friends of the Clearwater (*see* Bilodeau and Juel, 2021).
- Involves a geographic area with unique characteristics, including ecologically critical areas such as areas of connectivity for grizzly bears dispersing from recovery areas, as well as in the Moose Mountain Inventoried Roadless Area (IRA) and within an uninventoried roadless area adjacent to the Hoodoo IRA.
- Involves effects on the human environment that are likely to be highly controversial, including the use of regeneration harvests to mimic natural disturbance patterns.
- Involves effects that are highly uncertain or involve unique or unknown risks, which is certainly the case in the context of climate change.
- Is related to other actions with cumulatively significant impacts, as we further discuss below.
- May adversely affect species listed or critical habitat designated under the Endangered Species Act (ESA), including grizzly bear (given the increase in road densities that can further hinder habitat connectivity and thus recovery), Canada lynx, and bull trout.

Assumptions And Uncertainty About Vegetation Treatments And Wildfire

We question the agency's assumptions that reducing tree densities and fuel loadings will result in less intense fire behavior. Powell, 2019: ("what fire scientists call a forest's 'fuel load' is not the main cause of large, unstoppable fires; it's climate factors such as temperature, humidity, and especially wind. But the weather is ephemeral and invisible, while thick underbrush is easy to see and photograph); see also, ProPublica, 2020: "Despite What the Logging Industry Says,

Cutting Down Trees Isn't Stopping Catastrophic Wildfires" and Mountain Town News, 2020: "Colorado's Troublesome megafire".

Science shows that fuel treatments have a modest effect on fire behavior, and that fuel reduction does not necessarily suppress fire. Lydersen, et al., 2014 explain that reducing fuels does not consistently prevent large forest fires, and seldom significantly reduces the outcome of large fires. Studies from the FS's own Rocky Mountain Research Station refute the assumptions that vegetation treatments will result in less intense fire behavior. Calkin, et al., 2014 explain, "[p]aradoxically, using wildfire suppression to eliminate large and damaging wildfires ensures the inevitable occurrence of these fires")

Large fires are driven by several conditions that completely overwhelm fuels. (Meyer and Pierce, 2007.) Because weather is often the greatest driving factor of a forest fire, and because the strength and direction of the wildfire is often determined by topography, fuels reduction projects cannot guarantee fires of less severity. (Rhodes, 2007; Carey and Schumann, 2003.)

Vegetation treatments based on historical reference conditions to reduce high-intensity wildfire risk on a landscape scale are undermined by the fact that land managers have shown little ability to target treatments where fires later occur. Barnett, et al, 2016; Rhodes and Baker, 2008 (finding that fuel treatments have a mean probability of 2-8% of encountering moderate- or high- severity fire during the assumed 20-year period of reduced fuels). Analysis of the likelihood of fire is central to estimating likely risks, costs and benefits incurred with the treatment of "fuels." If fire does not affect treated areas while "fuels" are reduced, treatment impacts are not counterbalanced by benefits from reduction in fire impacts. Results from Rhodes and Baker, 2008 indicate that "even if fuel treatments were very effective when encountering fire of any severity, treatments will rarely encounter fire, and thus are unlikely to substantially reduce effects of high-severity fire."

"Fuel" treatments tend to make fire impacts worse—exacerbating the problems the FS is claiming to address. Fuel reduction may actually exacerbate fire severity in some cases since such actions leave behind combustible slash through at least one dry season, open the forest canopy to create more ground-level biomass, and increase solar radiation which dries out the understory. [Graham, et al., 2012; Martinson and Omi, 2013 (finding that in about a third of cases reviewed mechanical fuel reductions increased fire spread).] Also fuel reduction can exacerbate fire spread by opening up a forest to wind penetration. (Declaration of Dr. Joseph Werne, *Unite the Parks v. U.S. Forest Service*, E.D. Cal, 2021.)

We question the wisdom of attempting to control wildfire instead of learning to adapt to fire. See Powell 2019 (noting that severe fires are likely inevitable and unstoppable). See also Schoennagel et al., 2017 (explaining, "[o]ur key message is that wildfire policy and management require a new paradigm that hinges on the critical need to adapt to inevitably more fire in the West in the coming decades"). The FS must recognize that past logging and thinning practices likely increased risk of intense fire behavior on this landscape. But instead of learning from these past mistakes, here the FS is committing to making the same mistakes by proposing widespread logging and repeated burning across the landscape. It is well-established that communities (homes) are best protected from fire by home hardening, and judicious removal of fuels within

the surrounding 100-200 ft. radius. (Syphard et al. 2014; Cohen, 2000.) The FS fails to disclose the fact that addressing the home ignition zone will do more to protect property than the proposed activities.

We also question the need to reduce wildfire, a natural forest process. While some may view wildfires as tragic and the aftermath as a destruction zone, natural ecology shows otherwise. (See Powell, 2019, explaining how a young burned forest is an essential natural process and "nature's best-kept secret," providing new habitat for a plethora of birds, abundant wildflowers, insects, mushrooms, etc.). Further, in 2019 conservation scientists Dominick DellaSala and Chad Hanson published a study disputing the assumption that high-severity has increased in recent decades. In this megafire trend study, the researchers analyzed data on large high-severity burn patches across 11 western dry pine and mixed-conifer forests over three decades. They found no significant increase in the size of large high-severity burn patches since the early 1990s. (DellaSala and Hanson, 2019.) Most research studies define high severity as 90% tree mortality. (Moritz et al. 2014). The FS overestimates the risk of increasing of the amount of high severity wildfire. This leads to a bias towards carrying out widespread and intensive fuel treatments to respond to the ostensive increase in high intensity fire.

Impacts from climate change, including changing weather patterns and drought, are other driving factors for wildfires. (Id.) Instead of focusing on thinning and prescribed burning to manage the forest, the FS should focus on changeingits practices to adapt to the changing climate. At an absolute minimum, these studies demonstrate that the proposed treatments are controversial, ill-supported, and have the potential for significant impacts requiring preparation of an EIS.

Assumptions and Uncertainty About Vegetation Treatments and Forest Resilience

The FS believes that increased tree density and tree succession have resulted in a higher susceptibility to insects and disease, and improving resistance to insects means restoring and maintaining more open (less dense) stand structures to reduce tree stress. Yet, the best available science brings into question many FS underlying assumptions about the efficacy of vegetation treatments in reducing the effects from what can be characterized as a natural response to changing climate conditions. See Hart, et al., 2015 (finding that although mountain pine beetle infestation and fire activity both independently increased with warming, the annual area burned in the western United States has not increased in direct response to bark beetle activity); see also Hart and Preston, 2020 (finding "[t]he overriding influence of weather and pre-outbreak fuel conditions on daily fire activity . . . suggest that efforts to reduce the risk of extreme fire activity should focus on societal adaptation to future warming and extreme weather"); see also Black, et al., 2010 (finding, inter alia, that thinning is not likely to alleviate future large-scale epidemics of bark beetle); see also Six, et al., 2018 (study that found during mountain pine beetle outbreaks, beetle choice may result in strong selection for trees with greater resistance to attack, and therefore retaining survivors after outbreaks—as opposed to logging them—to act as primary seed sources could act to promote adaptation); see also Six et al., 2014 (noting "[s]tudies conducted during outbreaks indicate that thinning can fail to protect stands").

Ultimately, science provides only weak support for vegetative treatments as a way to improve forest resilience to large-scale disturbances such as high severity crown fire and insects, and numerous studies question this approach or have found it to be ineffective. In addition, all

mechanized treatments guarantee damage to ecosystem components, including soils, mycorrhizal networks, aquatics, and vegetation; they also have the potential to spread exotic plants and pathogens.

In a literature review, Simons (2008) states, "Restoration efforts aimed at the maintenance of historic ecosystem structures of the pre-settlement era would most likely reduce the resilient characteristics of ecosystems facing climate change (Millar 1999)."

The FS claims fuel treatments will help prevent outbreaks of bark beetle, but they virtually always leave slash through the next warm season, when a bark beetle outbreak could occur. Slash should not be left on the ground through the warm season following thinning treatments. This could precipitate a bark beetle outbreak.

The FS must prepare an EIS to carefully consider the best available science on likely impacts, and determine the efficacy of specific treatments.

FOREST SERVICE IS ILLEGALLY IMPLEMENTING THE DRAFT REVISED FOREST PLAN

Flawed rationales for the claimed purpose and need.

The FS's newly concocted "desired conditions" result in cursory rationales to support a massive timber extraction proposal, in part by citing departures from historic conditions, threats from natural disturbances (wildfire, insects and diseases), and increased wildfire risks due to past suppression efforts that the agency still asserts must continue into the foreseeable future (Chief's Wildland Fire Direction, August 2, 2021). The agency's underlying assumptions are both highly controversial and uncertain, thereby necessitating analysis under an EIS. NEPA regulations state that: "NEPA procedures must ensure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA." 40 C.F.R. § 1500.1(b) (1978).

The Vegetation Resource Report discloses that, "even after implementation of the Proposed Action, future treatments will be needed to continue moving the project area into desired ranges. Treatment must occur over both space and time to meet and remain within desired conditions." The FS is not citing the current forest plan when it's talking about "desired ranges" etc. and there has never been any NEPA process which examines the impacts of such actions or potentially better alternatives. Whatever plan the Vegetation Resource Report is talking about is not the CNF Forest Plan.

In describing Project "desired" vegetation conditions, no less that six times this Vegetation Resource Report states, "Forest Plan Revision Desired Conditions for MA3 (Probert 2017**), very similar to E1 MA**" (emphasis added). This depiction of similarity is not based upon any genuine comparison of existing Forest Plan direction for Management Area E1 and the draft RFP's Management Area 3 (MA3). For one example, current CNF forest plan Management Area E1 Timber Standards include 4.c.: "Identify and maintain suitable old-growth stands are replacement habitats for snag and old-growth dependent wildlife species in accordance with

criteria in Appendix H." However "Forest Plan Revision Desired Conditions for MA3" includes nothing close to the current CNF forest plan old growth direction for Management Area E1.

To ensure that the agency has taken the required "hard look," courts hold that the agency must utilize "public comment and the best available scientific information." *Biodiversity Cons. Alliance v. Jiron*, 762 F.3d 1036, 1086 (10th Cir. 2014) (internal citation omitted). The FS fails to demonstrate the widespread use of specific proposed treatments will improve ecosystem resilience as part of the desired condition. There is no assurance that attempting to attain such a goal will in fact restore ecological integrity. The FS relies on uncertain and controversial assumptions that the proposed treatments will effectively achieve the intended purposes and meet the stated needs.

CUMULATIVE EFFECTS AND MONITORING

The FS ignores—or is apparently unaware of—recent vegetation (and other) management projects it has authorized and implemented in the Dead Laundry project area. This results in omission of relevant recent FS management from the EA. The FS seems intent on erasing much of the history of its management. Therefore the FS fails to explain how this present proposal fits in with its overall management scheme.

For one example, there's the Deception Fuels Project, Decision Memo signed 1/20/2009 (see Deception Fuels DM.pdf). Comparison of the Dead Laundry activities map and the map included with that DM reveals that most of the acreage which experienced "fuel reduction" under the Deception Fuels Project is being proposed for treatment once again. The main objective of Deception Fuels was to thin out "young, dense overstocked stands that provide continuous ladder fuels" to reduce fire hazards to adjacent landowners—similar to Dead Laundry objectives. What went wrong—such that many of the same areas are once again needing "treatment"? Or was the FS deceiving the landowners in claiming to be adequately reducing the fire hazard? And are those landowners even entitled to—or in need of—endless and repeated U.S. taxpayer dollars for their protection?

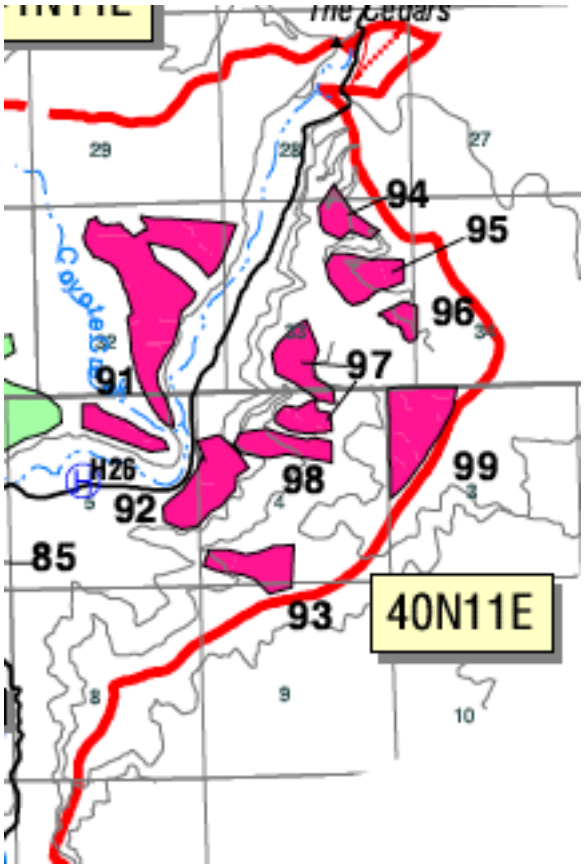
A similar situation exists with the Independence Thinning Timber Sale, Decision Memo signed 8/8/2006 (*see* Independence Thinning DM.pdf). That earlier objective was to "improve forest health" not unlike an objective of Dead Laundry. Again, there is much overlap of proposed Dead Laundry acreage with the Independence Thinning acreage. So what went wrong—and why is treatment needed again? Was the FS being deceptive in claiming it was accomplishing significant improvements in forest health with the recent Independence Thinning Timber Sale? Or maybe the FS simply failed to properly examine existing conditions before preparing the Dead Laundry EA?

The FS authorized a larger landscape project just a few years before those—the Middle-Black timber sale. According to the Final EIS, its purposes were to:

- Restore vegetative successional stages across the analysis area to a more natural condition, recognizing historical patch sizes and locations.

- Restore white pine as the major cover type on LTAs where it historically occurred and improve forest health by reducing the current high levels of grand fir, Douglas-fir, and western redcedar cover types through planting western white pine and western larch,
- Actively restore fire to maintain healthy ecosystems and reduce the risk of widespread catastrophic wildfire.
- Protect the natural condition and biodiversity of the area by eliminating new invaders (a weed species not previously reported in the area), reducing the extent and density of established noxious weeds, and preventing or limiting the spread of established weeds.
- Begin watershed restoration by repairing upland sediment sources, preventing potential failures, and removing passage barriers to fish and other aquatic organisms.

This map from the Middle-Black EIS shows the overlap portion between that timber sale and Dead Laundry:



The key from that map specifies those reddish units for "Prescribed Burns of logging slash and brush in preparation for planting." Comparison of this map with maps of the Dead Laundry proposal reveals significant overlap of the two project's vegetation manipulations. That map also displays "Major Roads" and "Collector and Local Roads" not shown on Dead laundry maps.

Since no cumulative effects analysis examining the effects or results of recent projects in the Dead Laundry project area is found in this EA, the outcome of those projects are apparently

unknown to this ID Team—which minimizes the credibility of the Dead Laundry reports and analyses. We remind the FS that our comments on the EA included:

> It is vital that the results of past monitoring be incorporated into project analysis and planning. The following must be disclosed:
> - A list of all past projects (completed or ongoing) implemented in the analysis area.
> - A list of the monitoring commitments made in all previous NEPA documents covering the analysis area.
> - The results of all that monitoring.
> - A description of any monitoring, specified in those past project NEPA for the analysis area, which has yet to be gathered and/or reported.
> - A summary of all monitoring of resources and conditions relevant to the proposal or analysis area as a part of the Forest Plan monitoring and evaluation effort.
> - A cumulative effects analysis that includes the results from the monitoring required by the Forest Plan.

ROADLESS AREAS

The FS is required to discuss a project's impacts on areas of "sufficient size" for future wilderness designation. *Lands Council*, 529 F.3d at 1231, citing 16 U.S.C. § 1131(c).

The FS doesn't recognize best scientific information that indicates the high ecological integrity and functioning of roadless and unmanaged areas. Management activities have damaged the streams and other natural features found in the project area watersheds. The FS has yet to demonstrate it can extract resources in a sustainable manner in roaded areas.

Unroaded areas greater than about 1,000 acres, whether they have been inventoried or not, provide valuable natural resource attributes that are better left protected from logging and other management activities. Scientific research on roadless area size and relative importance is ongoing. Such research acknowledges variables based upon localized ecosystem types, naturally occurring geographical and watershed boundaries, and the overall conditions within surrounding ecosystems. In areas such as the Dead Laundry project area, where considerable past logging and management alterations have occurred, protecting relatively ecologically intact roadless areas even as small as 500 - 1,000 acres has been shown to be of significant ecological importance. These valuable and increasingly rare roadless area attributes include: water quality; healthy soils; fish and wildlife refugia; centers for dispersal, recolonization, and restoration of adjacent disturbed sites; reference sites for research; non-motorized, low-impact recreation; carbon sequestration; refugia that are relatively less at-risk from noxious weeds and other invasive non-native species, and many other significant values. (See USDA Forest Service, 2000e.)

See Friends of the Clearwater, 2020 for an observation on how roadless rules are being exploited to downgrade the wilderness values and roadless characteristics of IRAs.

Missoula CURRENT
Missoula's News Journal

Missoula County to Forest Service: More emphasis on home ignition zones

By Martin Kidston
December 23, 2021

https://missoulacurrent.com/outdoors/2021/12/missoula-ignition-zones/

In a letter to the Forest Service, Missoula County is asking the local agency to make greater emphasis of home ignition zones and the role they can play in preventing the devastating fires that have plagued other Western communities in recent years.

Relying on forest management alone may leave some with a false sense of security, the county said.

“There might be good reason to do those forest treatments, for landscape ecology or restoration purposes,” said Commissioner Dave Strohmaier. “But nobody’s hope should be elevated to think that’s going to appreciably do anything to save your home in a fire.”

The county’s letter, addressed to the Missoula Ranger District, relates to the Wildfire Adapted Missoula plan being developed by the Lolo National Forest. Among other things, the plan calls for a number of forest treatment projects across more than 455,000 acres, including 177,000 acres on Forest Service lands.

Several demonstration projects have already taken place, such as the Grant Creek Fuels Reduction project, the Marshall Woods Forest Restoration Project and maintenance work in Pattee Canyon.

The plan's environmental assessment was recently released and the county has commented throughout the process. The Forest Service recently issued its Record of Decision, though the county believes it doesn't give adequate play to home ignition zones.

"There's 100 years of institutional inertia focused on fire control and some fundamental lack of awareness," Strohmaier said. "The sort of community destruction we've seen, whether it's those abutting forest lands or in Denton, where there's not a tree in site, has much more to do with what you do in your home ignition zone than some of the forest treatments that are sometimes promised as a means to protect your community."

The county believes the agency's Wildfire Adapted Missoula plan must parallel efforts to restore the role that fire plays on the landscape. The county also acknowledged that new tools are needed as climate change unfolds.

That may challenge the "institutional culture" of the Forest Service, the county wrote.

"Largely, we commented on the importance of home ignition zones relative to community wildfire resiliency," said county planner Chet Crowser. "It's fair to say we haven't felt like those concerns have been heard as well as we'd like, but the conversations have moved forward."

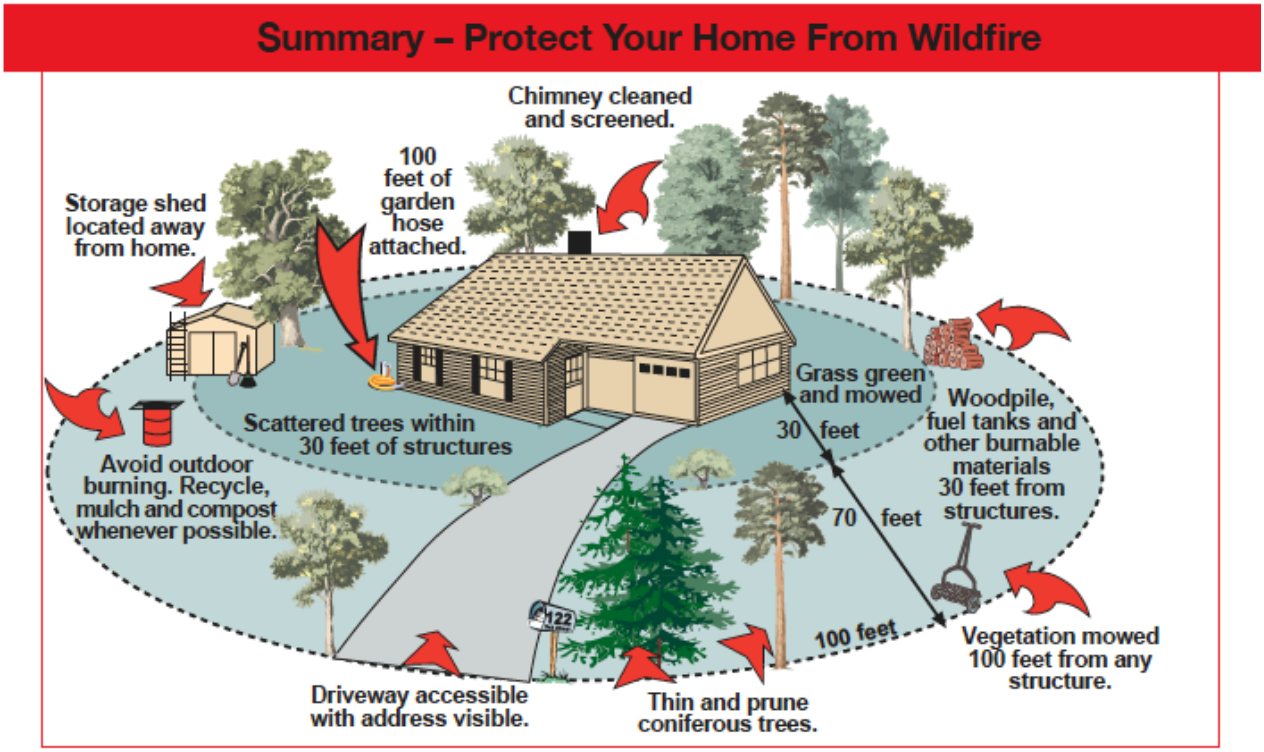
Strohmaier and Jack Cohen, a retired fire scientist with the Fire Sciences Laboratory in Missoula, have been vocal in recent years in asking the Forest Service and the public to abandon their expectations that 100% of all wildland fires can be doused 100% of the time.

Rather, they've worked to shift the conversation to the role home ignition zones play in the equation. In Cohen's research, he's seen houses burn to the ground while nearby trees are still green and wooden fences still stand.

Lofted embers can spark new fires outside the burn and neglecting the home ignition zones can lead to disaster. Keeping fires outside the urban interface may rely more heavily on preparation than on large scale forest treatment plans, Strohmaier said.

"There's still an opportunity to have some of that language included in a modified record of decision," Strohmaier said of the Forest Service plan. "There's also some other things on our end we can start working on, like updating our Community Wildfire Protection Plan, which admittedly might need to have the dust blown off it a little bit."

Objectors remind the FS that scientific research has concluded the Dead Laundry "hazardous fuel reduction" techniques increase the severity of subsequent fire, including increase the rate of fire spread—as our comments on the EA state. And in failing to inform readers of these important factors, the FS violates NEPA. Worse, the FS fails to provide the kind of vital information that could lead property owners to implement critical firewise steps they are uniquely positioned to implement.



From LIVING WITH FIRE: HOMEOWNERS' FIRESAFE GUIDE FOR MONTANA, 2009

"The key is to reduce fire intensity as wildfire nears the house. Consequently**, the most important person in protecting a house from wildfire is not a firefighter, but the property owner**. And it's the action taken by the owner before the wildfire occurs (such as proper landscaping) that is critical." (Living With Fire, 2009 emphasis added.)

The Firesafe Guide emphasizes that fuel conditions within the Home Ignition Zone ("the home itself and the immediate surrounding 30 to 200 feet") most influence structure survival during a wildfire. Yet instead of acting as a resource for homeowner education on this topic, the FS instead chooses to propagandize that "fuel" conditions well beyond the Home Ignition Zone (HIZ) are most important—attempting to harness the public's fear so as to neutralize opposition to its timber production program.

And hence the same old false solutions being peddled by the Biden Administration, in publicizing its "paradigm shift" in January of this year. An article in the *Missoulian* ("Fire Strategy Stuck with old tactics, experts warn") quotes retired Forest Service fire scientist Jack Cohen responding to the government's latest set of false solutions. Cohen stated, "I saw no new strategy but rather a potential increase in the same fire control strategy of 'fuel treatment' to enhance fire control." Below are more passages from that article:

> Cohen found no evidence that the writers considered best available science, which shows that wildland-urban disasters are mainly a factor of how houses catch fire, not forest management, he said. He cited extensive research explaining how community wildfire destruction (incidents where more than 100 homes get destroyed) happens when fires overrun the fuel breaks and forest treatments intended to control them. But it's not the "big

> flames of high intensity wildfires (that) cause total home destruction," but rather "lofted burning embers (firebrands) on the home and low intensity surface fire spreading to contact the home" that did the damage, often hours after the main fire had subsided or moved elsewhere.
>
> "The use of tired, old, ill-defined language such as 'hazardous fuels' does little to describe what the fuels (i.e., wildland vegetation) is hazardous to," said Missoula County Commissioner Dave Strohmaier... "We seem to have learned nothing from recent fires that have resulted in community destruction, such as Denton, Montana. This was a grass fire, and there were no forests to thin or otherwise eliminate the risk of crown fire from."
>
> "Community destruction is (a home ignition zone), not a fire control problem," Strohmaier said. Throwing more money at treatments that won't get the expected outcomes "does no one any good and sets up false expectations as to what will truly reduce the risk of community destruction and improve ecological and community resilience."

The FS omits discussion regarding how the WUI boundary was delineated, which undermines informed environmental decisionmaking. Counties all across the country have inconsistently delineated their WUI boundaries, and in many cases, counties have included large swaths of backcountry in their WUI boundaries for the sake of expediting logging operations far from homes and communities. A discussion about Clearwater County's WUI delineation is relevant because one of the stated needs for the project is to reduce hazardous fuels within the WUI. As such, it is imperative for the public and the agency to understand how the WUI was delineated.

Harry Jageman scoping comments stated:

> You also overstate concerns regarding private inholdings which only amount to a few hundred acres of old historical mining claims. The cabins are largely used by miners with mineral claims in the Moose Creek drainage during the summer and in the fall as hunting cabins. There are no roads maintained during the winter and all winter access is by snowmobile over several miles of difficult terrain. It is hardly an area where one would set up a permanent residence or a location that should be considered as a Wildland Urban Interface. There are much more appropriate and higher risk areas for the expenditure fuel treatment dollars than this location.

FS researchers have long since recognized that logging, especially the extensive and homogeneous logging "regeneration" cuts create, actually *increase* fire severity where the fire might otherwise have been severe. Stone et al. (2008), a technical report based on a presentation in 2004 (Proceedings of the Second International Symposium on Fire Economics, Planning, and Policy: A Global Perspective), discuss a study of a forested area southeast of Missoula, Montana affected by the Cooney Ridge fire complex. The scientists found fire severely and uniformly burned a watershed which had been extensively and homogeneously logged, in contrast to an adjacent watershed with higher fuel loads but greater heterogeneity which experienced mosaic of burn severities. They conclude, "Harvesting timber does not translate simply into reducing fire risk." Similar results have been repeatedly found in other published science.

Also see documents we are submitting as part of this objection:

- Fire Strategy Stuck with old tactics, experts warn
- Colorado's Suburban Firestorm
- Forests need fire — communities do not
- The 'ecological hate speech' developed around wildfire
- Nuance in Wildfire Policy is Badly Needed
- Living With Fire
- Living With Fire, 2009
- A New Direction for California Wildfire Policy
- As California burns, some ecologists say it's time to rethink forest management
- Logging makes forests and homes more vulnerable to wildfires
- Scientists Letter, 2018
- Scientists Letter, 2021

FOREST SERVICE IS DECEIVINGLY AND DELIBERATELY EXACERBATING CLIMATE CHANGE, ALREADY ON AN EXTREMELY DANGEROUS TRAJECTORY

The FS rejects peer reviewed scientific articles and other documents submitted for consideration by the public, in its apparent belief that only its opinion on this extremely serious and controversial subject is worthy of consideration.

The Draft EIS for the NPCNF's revised forest plan admits, "The current 1987 Forest Plans do not address climate change." That same Draft EIS includes these definitions:

> Carbon Pool: an area that contains an accumulation of carbon or carbon-bearing compounds or having the potential to accumulate such substances. May include live and dead material, soil material, and harvested wood products.
>
> Carbon Stock: the amount or quantity contained in the inventory of a carbon pool.

Neither of the terms "Carbon stock" or "carbon pool" appeared in the Dead Laundry EA. Nor did the word "climate" appear, except as part of the title of a section of the EA. This is the EA's analysis of the subject in its entirety:

> **Climate Change**
> The combined Nez Perce-Clearwater National Forests represent a very small amount of the carbon stored in forests in the United States (Heath et al. 2011). Given the available data and tools (USDA 2015; USDA 2016a), patterns and trends of carbon dynamics are best determined at larger scales and over long periods of time. This project and others taking place on the forest will at most affect a very small percentage of the forest carbon stocks, and a small fractional proportion of the total forest carbon stocks of the United States. The affected forest lands in this proposal would remain forests, not be converted to other land uses, and long-term forest services and benefits would be maintained. As such, the long-term cumulative effects of forest management will have little impact overall on a potential future scenario of carbon accumulation and loss. None of the alternatives would have a measurable impact on carbon stocks in either the short nor long term, because the area of

> treatment is a small fraction relative to regional and global carbon stocks (Z-001; NPC Forests Carbon Cycling and Storage Specialist Report).

As noted above, the project's purpose and need is skewed heavily toward departures from historic conditions. Yet, in relying on such historic conditions to inform project activities, the FS fails to account for the fact that climate change is fundamentally altering the agency's assumptions about the efficacy of the proposed actions. In other words, the FS cannot rely solely on historic reference conditions to formulate its vegetation treatments. Rather, the agency must also include current reference conditions from areas that have a passive management emphasis, in addition to future reference conditions based on the best available climate models.

Recent science supports the need to look beyond historical references to inform proposed actions: "in a time of pervasive and intensifying change, the implicit assumption that the future will reflect the past is a questionable basis for land management (Falk 2017)." Coop et al., 2020. While it is useful to understand how vegetative conditions have departed from those in the past, (and the role mixed-severity fire played in Ponderosa pine dominated stands), the FS cannot rely on them to define management actions, or reasonably expect the action alternatives will result in restoring ecological processes. Given changing climate conditions, the FS should emphasize reference conditions based on current and future ranges of variability, and less on historic departures. Further, the agency needs to shift its management approach to incorporate the likelihood that no matter what vegetation treatments it implements, there are going to be future forest wildfire-triggered conversions to other vegetation types. As such, the FS cannot rely on the success of resistance strategies, as Coop et al., 2020 explains:

> Contemporary forest management policies, mandates, and science generally fall within the paradigm of resisting conversion, through on-the-ground tactics such as fuel reduction or tree planting. Given anticipated disturbance trajectories and climate change, science syntheses and critical evaluations of such resistance approaches are needed because of their increasing relevance in mitigating future wildfire severity (Stephens et al. 2013, Prichard et al. 2017) and managing for carbon storage (Hurteau et al. 2019b). Managers seeking to wisely invest resources and strategically resist change need to understand the efficacy and durability of these resistance strategies in a changing climate. Managers also require new scientific knowledge to inform alternative approaches including accepting or directing conversion, developing a portfolio of new approaches and conducting experimental adaptation, and to even allow and learn from adaptation failures.

Moreseo, the Forest Plan defines areas as suitable for timber production where there is reasonable assurance that such lands can be adequately restocked. Given the changing ecological conditions due to the climate crisis, the likely decreased effectiveness of resistance strategies described by Coop et al, 2020 and the increased risk of vegetative conversion, (especially within areas of regeneration harvest), the FS must provide reasonable assurances that lands proposed for timber production can in fact be adequately restocked, which includes the anticipated time frame. Further, assurances that harvested areas will be replanted are not sufficient to demonstrate trees will be viable as climate crisis impacts increase.

Further, equally important to acknowledging the limitations of resistance strategies is the fact

that other pertinent scientific findings show warming and drying trends are having a major impact on forests, resulting in tree die-off even without wildfire or insect infestation. See, e.g., Parmesan, 2006; Breshears et al. 2005; Allen et al. 2010, 2015; Anderegg et al. 2012; Williams et al. 2013; Overpeck 2013; Funk et al. 2014; Millar and Stephenson 2015; Gauthier et al. 2015; Ault et al. 2016 ("business-as-usual emissions of greenhouse gases will drive regional warming and drying, regardless of large precipitation uncertainties"); Vose et al. 2016 ("In essence, a survivable drought of the past can become an intolerable drought under a warming climate").

Given the fallacies of using historic conditions as a reference for desired conditions and the uncertainty that treatments will maintain or restore ecological integrity in the context of climate change and likely forest conversion scenarios, the FS must reevaluate its assumptions about its proposed vegetative treatments, especially in regards to restocking success and species composition. Significant controversy exists as to the need for such treatments given the improper use and reliance on historic conditions. In fact, there is a high likelihood based on the aforementioned studies that some areas will not regenerate and will instead result in conversion to different vegetative groups. The FS should consider whether attrition due to climate change will reduce tree densities sufficiently so that thinning treatments are not needed to meet the project's purpose. NEPA mandates that the agency address this controversy and science that contradicts agency assumptions in an EIS.

In addition to the questionable success of the FS's pursuit of resistance strategies underlying its proposed actions, the agency must also reconsider numerous other assumptions. In fact, many of the agency's assumptions run contrary to the most recent science regarding the impact of logging on wildfire behavior, resilience of the forest to large-scale disturbances, and ability to provide quality wildlife habitat. Many of the scientific studies cited within our comments call into question the FS assumption that its proposed actions will achieve the stated purpose and need. Ultimately, the agency cannot assert that there is broad consensus in the scientific literature that commercial timber harvest or thinning in combination with prescribed fire reduces the potential for high severity wildfire to the extent characterized in the EA. For example, we have seen the FS rely heavily on Prichard et al. 2021 to support its proposed actions and assert broad scientific consensus as to their efficacy. Yet, even here the researchers raise several factors that the FS must address in an EIS. For example, they explain:

> Fuel reduction treatments are not appropriate for all conditions or forest types (DellaSala et al. 2004, Reinhardt et al. 2008, Naficy et al. 2016). In some mesic forests, for instance, mechanical treatments may increase the risk of fire by increasing sunlight exposure to the forest floor, drying surface fuels, promoting understory growth, and increasing wind speeds that leave residual trees vulnerable to wind throw (Zald and Dunn 2018, Hanan et al. 2020). Such conclusions indicate that treatments within areas of mesic site conditions may not be appropriate.

In addition, Prichard et al, 2021 explains the following:

> In other forest types such as subalpine, subboreal, and boreal forests, low crown base heights, thin bark, and heavy duff and litter loads make trees vulnerable to fire at any intensity (Agee 1996, Stevens et al 2020). Fire regimes in these forests, along with

lodgepole pine, are dominated by moderate- and high-severity fires, and applications of forest thinning and prescribed underburning are generally inappropriate.

Ultimately, what the agency proposes is a long-term active management regime that will require repeated tree cutting and burning since nowhere does the FS state it has any plans to allow unmanaged wildfire to play its natural ecological role. This equates to perpetual management with logging and prescribed burning, which is hardly ecological restoration. The FS's misguided efforts to mimic natural disturbance patterns fail to allow natural processes to function, causing unknown long-term results.

Ecological resilience, which the FS implies it is creating through this project, is not the absence of natural disturbances like wildfire or beetle kill, rather it is the opposite (DellaSala and Hanson, 2015, Chapter 1, pp. 12-13). What the FS promotes is the human control of the forest ecosystem through mechanical and other heavy-handed means to maintain unnatural stasis by eliminating, suppressing or altering natural disturbances such as wildfire, to facilitate the extraction of commercial resources for human use. This is the antithesis of ecological resilience and conservation of native biodiversity. Ecological resilience is the ability to ultimately return to predisturbance vegetation types after a natural disturbance, including higher-severity fire. This sort of dynamic equilibrium, where a varied spectrum of succession stages is present across the larger landscape, tends to maintain the full complement of native biodiversity on the landscape. (Thompson et al., 2009).

The FS must consider and disclose the direct, indirect, and cumulative impacts of the proposed project on climate change, as well as the direct, indirect, and cumulative impacts of climate change on the proposed action. Climatic conditions, particularly extreme rainfall, snowmelt, and flooding, pose substantial risks to the infrastructure on and near the National Forests. See Six et al., 2018 (studying increased mortality of trees, driven directly or indirectly by climate change), and Schoennagel et al., 2017. These events result in damage or destruction of infrastructure and impacts to environmental resources. Rapid climate change is very likely to increase the size and frequency of these climatic stressors, increasing the hazards and risk to infrastructure, people, and ecosystems. These concerns are especially important given the project area is alleged to include the WUI, and as a result cumulative impacts from this project and climate change are likely to have devastating impacts to people living in or near the WUI.

The FS must also consider and disclose in an EIS how changes in weather patterns due to climate change, including drought and extreme winds, play a major role in wildfire behavior and wildfire risk. Ignoring these factors will ignore key relevant factors that affect the agency's claimed purpose and need.

The FS must disclose and acknowledge the legal and regulatory framework that should guide its analysis of climate impacts, including the recently reinstated CEQ GHG guidance titled, "NEPA Guidance on Consideration of Greenhouse Gas Emissions" (Feb. 19, 2021). In light of the guidance's reinstatement, the FS must apply CEQ's 2016 NEPA climate guidance (or provide a non-arbitrary basis for declining to do so). The guidance contains specific directions concerning how agencies should analyze climate impacts from site-specific forest management projects (using the example of "a prescribed burn") that the agency must consider.

Further, the project will have direct, indirect, and cumulative impacts on climate change because the vegetation treatments will impact the ecosystem's ability to store carbon. Many of the area's forests are likely currently acting as carbon sinks, meaning they are storing more carbon than they are emitting. Science makes clear that the proposed action will likely worsen climate emissions by removing trees that are currently fixing carbon, turning them into wood products (which results in a significant loss of that carbon fixed in wood), and leaving a landscape with fewer or no trees and (eventually) seedlings that fix far less carbon than mature forests for decades if not centuries.

The Council on Environmental Quality Guidance, 2016 acknowledges, "changes in our climate caused by elevated concentrations of greenhouse gases in the atmosphere are reasonably anticipated to endanger the public health and public welfare of current and future generations." It directs federal agencies to consider the extent to which a proposed action such as the Owl Salvage timber sale would contribute to climate change. It rejects as inappropriate any notion that this timber sale is of too small a scale for such consideration:

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

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

The FS has refused to even attempt to cumulatively examine the effects, which is significant as the Northern Region has been approving many supersized clearcuts across the national forests of Montana and Northern Idaho. *See* Bilodeau and Juel, 2021. This region has approved over 93,000 acres of supersized clearcuts just in the last seven years. How much carbon stores would that eliminate? How much fossil fuel would be burned in the clearcutting of that acreage?

There exist quantitative tools for such analyses, such as Eve, et al., 2014. There is nothing in the EA or supporting documents to indicate the FS is accounting for greenhouse gases in any legitimate, quantitative manner.

It is crucial not only to protect old and mature forests, but to ensure early and mid-seral stands

can grow into new those conditions, especially since the FS has admitted, regarding mature forests in Alaska, such forests "likely store considerably more carbon compared to younger forests in this area (within the individual trees themselves as well as within the organic soil layer found in mature forests)." (USDA Forest Service, 2016h.) This is because when a forest is cut, the vast majority of the stored carbon in the forest is released over time as CO_2, thereby converting forests from a sink to a "source" or "emitter." See, e.g., DellaSala, 2021.

Recent studies agree that maintaining forests rather than cutting them down can help reduce the impacts of climate change. E.g., Moomaw, et al., 2019: "Stakeholders and policy makers need to recognize that **the way to maximize carbon storage and sequestration is to grow intact forest ecosystems where possible**." (Emphasis added). Another report (Hudiburg et al., 2019) concludes:

> **Allowing forests to reach their biological potential for growth and sequestration, maintaining large trees** (Lutz et al 2018), reforesting recently cut lands, and afforestation of suitable areas **will remove additional CO2 from the atmosphere**. Global vegetation stores of carbon are 50% of their potential including western forests because of harvest activities (Erb et al 2017). Clearly, western forests could do more to address climate change through carbon sequestration **if allowed to grow longer**. (Emphasis added.)

In a literature review from leading experts on forest carbon storage, Law, et al. (2020) reported:

> There is absolutely no evidence that thinning forests increases biomass stored (Zhou et al. 2013). It takes decades to centuries for carbon to accumulate in forest vegetation and soils (Sun et al. 2004, Hudiburg et al. 2009, Schlesinger 2018), and it takes decades to centuries for dead wood to decompose. We must preserve medium to high biomass (carbon-dense) forest not only because of their carbon potential but also because they have the greatest biodiversity of forest species (Krankina et al. 2014, Buotte et al. 2019, 2020).

Also *see* Dr. Law explaining these matters in the video, "The Surprising Truth Behind Planting Trees and Climate Change" submitted on data disk as part of this objection.

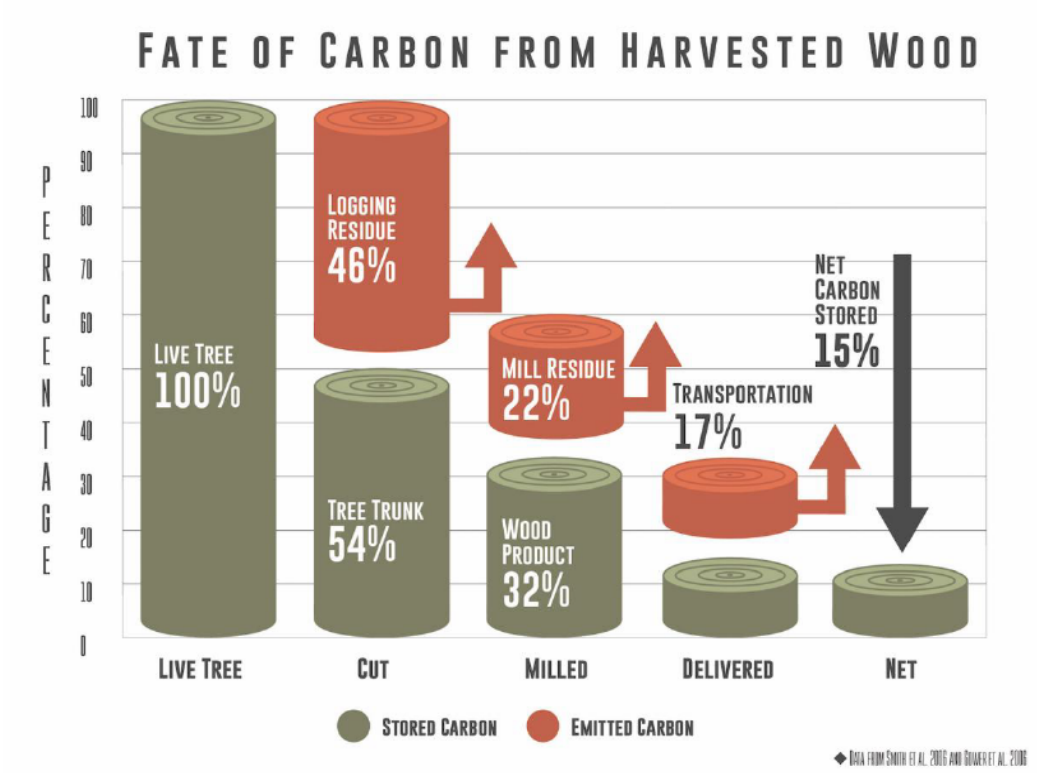
Law and Moomaw, 2021 recently concluded:

> Recent projections show that to prevent the worst impacts of climate change, governments will have to increase their pledges to reduce carbon emissions by as much as 80%. We see the next 10 to 20 years as a critical window for climate action, and believe that **permanent protection for mature and old forests is the greatest opportunity for near-term climate benefits.** (Emphasis added.)

Logging also doesn't increase carbon storage in the US by reducing future fire emissions. Research has found high carbon losses associated with "fuel treatment" and only modest differences associated with the high-severity fire and low severity fire that fuel treatment is meant to encourage. Campbell et al. 2012. And where some disturbances like insects, disease, and fire kill trees and lower carbon sequestration, logging has the greater impact--up to ten times

the carbon from forest fires and bark beetles together. *See* Harris et al. 2016. Please do an analysis that recognizes this.

Also, logging does not keep carbon out of the atmosphere. The below graphic is from the Josephine County Democrats Webpage, Forest Defense is Climate Defense (https://josephinedemocrats.org/forest-defense-is-climate-defense/), where the illustrator used the information in Gower et al. 2003 and Smith et al. 2006 to create the following illustration of how carbon is lost into the atmosphere from logging.



The importance of trees for carbon capture will rise especially if, as recent evidence suggests, hopes for soils as a carbon sink may be overly optimistic. (He et al., 2016) Such a potentially reduced role of soils doesn't mean that forest soils won't have a role in capture and storage of carbon, rather it puts more of the onus on aboveground sequestration by trees, even if there is a conversion to unfamiliar mixes of trees.

Forests affect the climate, climate affects the forests, and there's been increasing evidence of climate triggering forest cover loss at significant scales (Breshears et al. 2005), forcing tree species into new distributions "unfamiliar to modern civilization" (Williams et al. 2012), and raising a question of forest decline across the 48 United States (Cohen et al. 2016).

In 2012 Forest Service scientists reported, "Climate change will alter ecosystem services, perceptions of value, and decisions regarding land uses." (Vose et al. 2012.)

The 2014 National Climate Assessment chapter for the Northwest is prefaced by four "key messages" including this one: "The combined impacts of increasing wildfire, insect outbreaks,

and tree diseases are already causing widespread tree die-off and are virtually certain to cause additional forest mortality by the 2040s and long-term transformation of forest landscapes. Under higher emissions scenarios, extensive conversion of subalpine forests to other forest types is projected by the 2080s." (Mote et al. 2014.)

None of this means that longstanding values such as conservation of old-growth forests are no longer important. Under increasing heat and its consequences, we're likely to get unfamiliar understory and canopy comprised of a different mix of species. This new assortment of plant species will plausibly entail a new mix of trees, because some familiar tree species on the Forest may not be viable—or as viable—under emerging climate conditions.

That said, the plausible new mix will include trees for whom the best policy will be in allowing them to achieve their longest possible lifespan, for varied reasons including that big trees will still serve as important carbon capture and storage (Stephenson et al. 2014).

Managing forest lands with concerns for water will be increasingly difficult under new conditions expected for the 21st century. (Sun and Vose, 2016.) Already, concerns have focused on new extremes of low flow in streams. (Kormos et al. 2016.) The 2014 National Climate Assessment Chapter for the Northwest also recognizes hydrologic challenges ahead: "Changes in the timing of streamflow related to changing snowmelt are already observed and will continue, reducing the supply of water for many competing demands and causing far-reaching ecological and socioeconomic consequences." (Mote et al. 2014.)

Malmsheimer et al. 2008 state, "Forests are shaped by climate. Along with soils, aspect, inclination, and elevation, climate determines what will grow where and how well. Changes in temperature and precipitation regimes therefore have the potential to dramatically affect forests nationwide."

Kirilenko and Sedjo, 2007 state "The response of forestry to global warming is likely to be multifaceted. On some sites, species more appropriate to the climate will replace the earlier species that is no longer suited to the climate."

Some FS scientists recognize this changing situation, for instance Johnson, 2016:

> 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.
>
> The current drought in California serves as a reminder and example that forests of the 21st century may not resemble those from the 20th century. "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."

Westerling, et al. 2006 state:

> Robust statistical associations between wildfire and hydro-climate in western forests indicate that increased wildfire activity over recent decades reflects sub-regional responses to changes in climate. Historical wildfire observations exhibit an abrupt transition in the mid-1980s from a regime of infrequent large wildfires of short (average of one week) duration to one with much more frequent and longer-burning (five weeks) fires. This transition was marked by a shift toward unusually warm springs, longer summer dry seasons, drier vegetation (which provoked more and longer-burning large wildfires), and longer fire seasons. Reduced winter precipitation and an early spring snowmelt played a role in this shift. Increases in wildfire were particularly strong in mid-elevation forests. …The greatest increases occurred in mid-elevation, Northern Rockies forests, where land-use histories have relatively little effect on fire risks, and are strongly associated with increased spring and summer temperatures and an earlier spring snowmelt.

Running, 2006 cites model runs of future climate scenarios from the 4th Assessment of the Intergovernmental Panel on Climate Change, stating:

> (S)even general circulation models have run future climate simulations for several different carbon emissions scenarios. These simulations unanimously project June to August temperature increases of 2° to 5°C by 2040 to 2069 for western North America. The simulations also project precipitation decreases of up to 15% for that time period (*11*). Even assuming the most optimistic result of no change in precipitation, a June to August temperature increase of 3°C would be roughly three times the spring-summer temperature increase that Westerling *et al.* have linked to the current trends. Wildfire burn areas in Canada are expected to increase by 74 to 118% in the next century (*12*), and similar increases seem likely for the western United States.

The Pacific Northwest Research Station, 2004 recognizes "(a) way that climate change may show up in forests is through changes in disturbance regimes—the long-term patterns of fire, drought, insects, and diseases that are basic to forest development."

The District Court of Montana ruled in Case 4:17-cv-00030-BMM that the Federal government was required to evaluate the climate change impacts of the federal government coal program.

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.

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.

Davis et al., 2019 state:

> 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 postfire 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.

Forests are already experiencing emissions-driven deforestation, on both the post-fire and post-logging acreage.

The EA does not disclose recent restocking monitoring data and analysis.

The issue of forest response to climate change is also of course an issue of broad importance to community vitality and economic sustainability. Raising a question about persistence of forest stands also raises questions about hopes—and community economic planning—for the sustainability of forest-dependent jobs. Allen et al., 2015 state:

> Patterns, mechanisms, projections, and consequences of tree mortality and associated broad-scale forest die-off due to drought accompanied by warmer temperatures—hotter drought", an emerging characteristic of the Anthropocene—are the focus of rapidly expanding literature.
>
> …(R)ecent studies document more rapid mortality under hotter drought due to negative tree physiological responses and accelerated biotic attacks. Additional evidence suggesting greater vulnerability includes rising background mortality rates; projected increases in drought frequency, intensity, and duration; limitations of vegetation models such as inadequately represented mortality processes; warming feedbacks from die-off; and wildfire synergies.
>
> …We also present a set of global vulnerability drivers that are known with high confidence: (1) droughts eventually occur everywhere; (2) warming produces hotter droughts; (3) atmospheric moisture demand increases nonlinearly with temperature during drought; (4) mortality can occur faster in hotter drought, consistent with fundamental physiology; (5) shorter droughts occur more frequently than longer droughts and can become lethal under warming, increasing the frequency of lethal drought nonlinearly; and (6) mortality happens rapidly relative to growth intervals needed for forest recovery.

> These high-confidence drivers, in concert with research supporting greater vulnerability perspectives, support an overall viewpoint of greater forest vulnerability globally. We surmise that mortality vulnerability is being discounted in part due to difficulties in predicting threshold responses to extreme climate events. Given the profound ecological and societal implications of underestimating global vulnerability to hotter drought, we highlight urgent challenges for research, management, and policy-making communities.

Heat, a long-established topic of physics, plays an equally important role at the level of plant and animal physiology—every organism only survives and thrives within thermal limits. For example, Pörtner et al. (2008) point out, "All organisms live within a limited range of body temperatures… Direct effects of climatic warming can be understood through fatal decrements in an organism's performance in growth, reproduction, foraging, immune competence, behaviors and competitiveness." The authors further explain, "Performance in animals is supported by aerobic scope, the increase in oxygen consumption rate from resting to maximal." In other words, rising heat has the same effect on animals as reducing the oxygen supply, and creates the same difficulties in breathing. But breathing difficulties brought on by heat can have important consequences even at sub-lethal levels. In the case of grizzly bears, increased demand for oxygen under increasing heat has implications for vigorous (aerobically demanding) activity including digging, running in pursuit of prey, mating, and the play of cubs.

Respected experts say that the atmosphere might be able to safely hold 350 ppm of CO_2.[1] So when the atmosphere was at pre-industrial levels of about 280 ppm, there was a cushion of about 70 ppm which represents millions of tons of greenhouse gas emissions. Well, now that cushion is completely gone. The atmosphere is now over 400 ppm CO_2 and rising. Therefore the safe level of additional emissions (from logging or any other activity) is negative. There is no safe level of additional emissions that our earth systems can tolerate. We need to be removing carbon from the atmosphere—not adding to it.[2] How? By allowing forests to grow. Logging moves us away from our objective while conservation moves us toward our objective.

Pecl, et al. 2017 "review the consequences of climate-driven species redistribution for economic development and the provision of ecosystem services, including livelihoods, food security, and culture, as well as for feedbacks on the climate itself." They state, "Despite mounting evidence for the pervasive and substantial impacts of a climate-driven redistribution of Earth's species, current global goals, policies, and international agreements fail to account for these effects. … To date, all key international discussions and agreements regarding climate change have focused on the direct socioeconomic implications of emissions reduction and on funding mechanisms; **shifting natural ecosystems have not yet been considered in detail**." (Emphasis added.)

The following figure is from a report by the Union of Concerned Scientists & Rocky Mountain Climate Organization (Funk et al., 2014):

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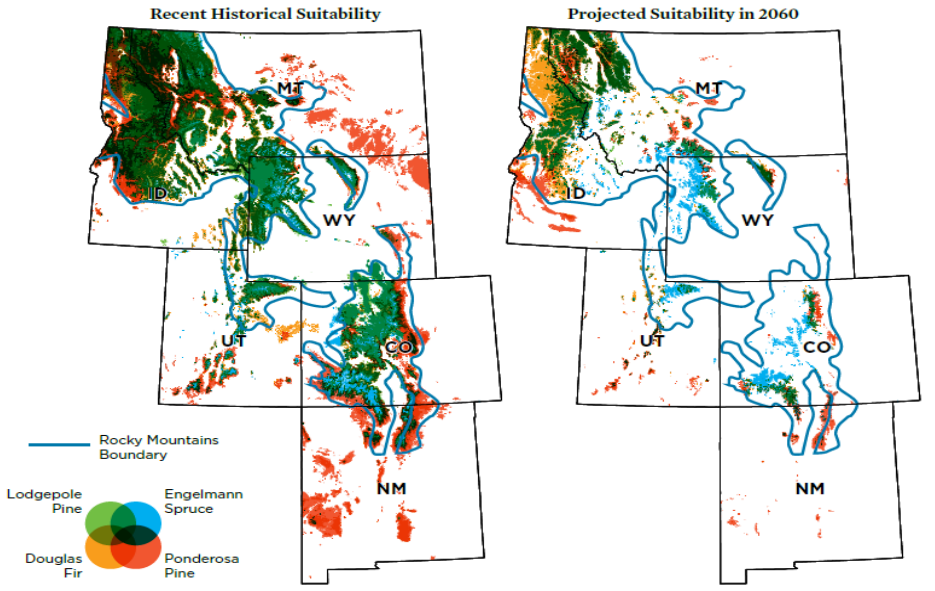
[1] http://www.350.org/about/science.

[2] "To get back to 350 ppm, we'll have to run the whole carbon-spewing machine backwards, sucking carbon out of the atmosphere and storing it somewhere safely. … By growing more forests, growing more trees, and better managing all our forests…" (http://blog.cleanenergy.org/2013/11/26/exploringbiocarbon-tools/comment-page-1/#comment-375371)

FIGURE 5 AND TABLE 1. **Projected Changes in Suitable Ranges for Key Rocky Mountain Tree Species**



Species	Current	2060		
	Recent Historical Suitability (acres)	Projected Suitability (acres)	Net Change in Suitability (acres)	Percent Net Change
Lodgepole Pine	60,474,000	6,065,000	-54,409,000	-90%
Ponderosa Pine	39,842,000	7,771,000	-32,071,000	-80%
Engelmann Spruce	64,651,000	21,999,000	-42,652,000	-66%
Douglas Fir	53,620,000	22,606,000	-31,014,000	-58%

The caption under Funk et al.'s Figure 5 and Table 1 states:

> Much of the current range of these four widespread Rocky Mountain conifer species is projected to become climatically unsuitable for them by 2060 if emissions of heat-trapping gases continue to rise. The map on the left shows areas projected to be climatically suitable for these tree species under the recent historical (1961–1990) climate; the map on the right depicts conditions projected for 2060 given medium-high levels of heat-trapping emissions. Areas in color have at least a 50 percent likelihood of being climatically suitable according to the models, which did not address other factors that affect where species occur (e.g., soil types). Emissions levels reflect the A2 scenario of the Intergovernmental Panel on Climate Change. For more about this methodology, see www.ucsusa.org/forestannex.

Pecl, et al. 2017 conclude:

> The breadth and complexity of the issues associated with the global redistribution of species driven by changing climate are creating profound challenges, with species movements already affecting societies and regional economies from the tropics to polar regions. Despite mounting evidence for these impacts, current global goals, policies, and international agreements do not sufficiently consider species range shifts in their formulation or targets. Enhanced awareness, supported by appropriate governance, will provide the best chance of minimizing negative consequences while maximizing opportunities arising from species

movements—movements that, with or without effective emission reduction, will continue for the foreseeable future, owing to the inertia in the climate system.

Moomaw and Smith, 2017 identify the need for forest protection to be an urgent, national priority in the fight against climate change and as a safety net for communities against extreme weather events caused by a changing climate. As those authors explain:

> Global climate change is caused by excess CO_2 and other greenhouse gases transferred to the atmosphere from other pools. Human activities, including combustion of fossil fuels and bioenergy, forest loss and degradation, other land use changes, and industrial processes, have contributed to increasing atmospheric CO_2, the largest contributor to global warming, which will cause temperatures to rise and stay high into the next millennium or longer.
>
> The most recent measurements show the level of atmospheric carbon dioxide has reached 400 parts per million and will likely to remain at that level for millennia to come. Even if all fossil fuel emissions were to cease and all other heat-trapping gases were no longer emitted to the atmosphere, temperatures close to those achieved at the emissions peak would persist for the next millennium or longer.
>
> Meeting the goals of the Paris Agreement now requires the implementation of strategies that result in negative emissions, i.e., extraction of carbon dioxide from the atmosphere. In other words, we need to annually remove more carbon dioxide from the atmosphere than we are emitting and store it long-term. Forests and soils are the only proven techniques that can pull vast amounts of carbon dioxide out of the atmosphere and store it at the scale necessary to meet the Paris goal. Failure to reduce biospheric emissions and to restore Earth's natural climate stabilization systems will doom any attempt to meet the Paris (COP21) global temperature stabilization goals.
>
> The most recent U.S. report of greenhouse gas emissions states that our forests currently "offset" 11 to 13 percent of total U.S. annual emissions. That figure is half that of the global average of 25% and only a fraction of what is needed to avoid climate catastrophe. And while the U.S. government and industry continue to argue that we need to increase markets for wood, paper, and biofuel as climate solutions, the rate, scale, and methods of logging in the United States are having significant, negative climate impacts, which are largely being ignored in climate policies at the international, national, state, and local levels.
>
> The actual carbon stored long-term in harvested wood products represents less than 10 percent of that originally stored in the standing trees and other forest biomass. If the trees had been left to grow, the amount of carbon stored would have been even greater than it was 100 years prior. Therefore, from a climate perspective, the atmosphere would be better off if the forest had not been harvested at all. In addition, when wood losses and fossil fuels for processing and transportation are accounted for, carbon emissions can actually exceed carbon stored in wood products.

Climate change science suggests that logging for sequestration of carbon, logging to reduce wild fire, and other manipulation of forest stands does not offer benefits to climate. Rather, increases in carbon emissions from soil disturbance and drying out of forest floors are the result. The FS can best address climate change through minimizing development of forest stands, especially stands that have not been previously logged, by allowing natural processes to function. Furthermore, any supposedly carbon sequestration from logging are usually more than offset by carbon release from ground disturbing activities and from the burning of fossil fuels to accomplish the timber sale, even when couched in the language of restoration. Reducing fossil fuel use is vital. Everything from travel planning to monitoring would have an important impact in that realm.

Funk et al., 2014 indicate 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. It is indeed time to speak honestly about unrealistic expectations relating to desired conditions.

And according to scientific literature it seems highly unlikely that greenhouse gas concentrations and the heat they trap in the atmosphere will be held at current levels.

The FS fails to analyze and disclose conditions we can realistically expect as heat trapped by increasing greenhouse gas concentrations steadily tightens its grip—and impacts on forests accrue locally, regionally, nationally, and globally.

The EA fails to assess and disclose all risks associated with the vegetation manipulation proposed.

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

Golladay et al., 2016 state, "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**… (Emphasis added).

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 EA fails to do so. The national forests have already experienced considerable difficulty restocking on areas that have been subjected to 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, and requires restocking in five years.

The EA doesn't address the question of how lands were determined to be suitable for the type of management ongoing or proposed. It does not cite the specific documentation that supposedly determined that the specific areas proposed for logging with Dead Laundry are suitable for timber production. The Beaver-Cedar Land Exchange FEIS states, "Suitability of the Cedars Area was determined through interpolation of stand exam data obtained from the FS blocks within the checkerboard area." Yet now much of the acquired land is being subject to logging, apparently without the necessary suitability determination.

It's time to analyze and disclose the fact that the NPCNF 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 §6(g)(3)(E)(ii)] because of the impacts of climate change.

Stevens-Rumann, et al., (2018) state: "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**. (Emphases added.)

The EA fails to quantify CO_2 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, recreational motor vehicles, and emissions associated with livestock grazing. The FS is simply ignoring the climate impacts of those management actions and other authorized or allowed activities.

Kassar and Spitler, 2008 provide an analysis of the carbon footprint of off-road vehicles in California. They determined that:

> Off-road vehicles in California currently emit more than 230,000 metric tons — or 5000 million pounds — of carbon dioxide into the atmosphere each year. This is equivalent to the emissions created by burning 500,000 barrels of oil. The 26 million gallons of gasoline consumed by off-road vehicles each year in California is equivalent to the amount of gasoline used by 1.5 million car trips from San Francisco to Los Angeles.
>
> . . . Off-road vehicles emit considerably more pollution than automobiles. According to the California Air Resources Board, off-road motorcycles and all-terrain vehicles produce 118 times as much smog-forming pollutants as do modern automobiles on a per-mile basis.
>
> . . . Emissions from current off-road vehicle use statewide are equivalent to the carbon dioxide emissions from 42,000 passenger vehicles driven for an entire year or the electricity used to power 30,500 homes for one year.

Also, Sylvester, 2014 provides data on the amount of fossil fuel being consumed by snowmobiles in Montana, from which one can calculate the carbon footprint. The study finds that resident snowmobilers burn 3.3 million gallons of gas in their snowmobiles each year and a

similar amount of fuel to transport themselves and their snowmobiles to and from their destination. Non-residents annually burn one million gallons of gas in snowmobiles and about twice that in related transportation. So that adds up to 9.6 million gallons of fuel consumed in the pursuit of snowmobiling each year in Montana alone. Multiply that by 20 pounds of carbon dioxide per gallon of gas (diesel pickups spew 22 pounds per gallon) and snowmobiling releases 192 million pounds (96 thousand tons) of climate-warming CO_2 per year into the atmosphere.

For the above reasons, this EA is utterly insufficient. It doesn't recognize or analyze highly relevant information or consider the science that questions the EA's underlying assumptions and therefore reveals scientific controversy. It doesn't disclose high-quality information to the public, and it doesn't take a hard look at this proposed action in the manner needed. This is compounded by the multitude of projects on the NPCNF, which represent cumulative effects that must be analyzed for carbon sequestration and global warming impacts at local and regional levels. This EA violates the National Environmental Policy Act.

The FS must overhaul its land management approach to one prioritizing conservation of carbon pools, long-term and short-term, to preserve the atmosphere, the biosphere, and prospects for the survival of civilization.

The project activities will remove trees across a few thousand acres, which requires the FS to quantify the climate impacts in an EIS. At a minimum, the agency must take a hard look at the science and policy we have presented within our comments and objection that demonstrate significant volumes—in some cases a majority—of carbon stored in trees are immediately lost when trees are logged and milled, and the rest is likely to be returned to the atmosphere sooner than would occur if the trees were left standing, eliminating any alleged benefits from storing carbon in wood products.

SCIENTIFIC INTEGRITY

GRIZZLY BEAR

Since there is solid documentation of recent documented sightings on the NPCNF, grizzly bear occupancy should be considered well established. Formal consultation on the Forest Plan is out of date. And formal consultation with the USFWS is needed for this project.

Grizzly bears once ranged throughout most of western North America, from the high Arctic to the Sierra Madre Occidental of Mexico, and from the coast of California across most of the Great Plains. Prior to European settlement, scientists believed that approximately 50,000 grizzly bears occupied the western United States between Canada and Mexico. With European settlement of the American West and a federally funded bounty program aimed at eradication, grizzly bears were shot, trapped, and poisoned, reducing the population to just 2 percent of their historic range. As a result of its precipitous decline, The USFWS listed the grizzly bear as a "Threatened" species in the lower 48 states under the Endangered Species Act in 1975. Today scientists estimate there are approximately 2,000 grizzly bears left in the lower 48 states, occupying five isolated populations.

One of the main factors hindering grizzly bear recovery is the lack of connectivity between recovery zones due to degraded habitat conditions caused by a variety of factors, but especially roads. Roads can increase risk of mortality, change bear behavior, resulting in habitat loss, habitat alteration, habitat displacement, habitat fragmentation, and population fragmentation. Proctor, et al. 2019; MacHutchon & Proctor 2015. Roads change wildlife habitat in more extreme and permanent ways than other anthropogenic causes of fragmentation. Forman & Alexander 1998; Spellerberg 1998. Roads not only cause striking changes to physical landscapes but also alter the ecosystem's general function and the patterns of wildlife use within these landscapes. Reed et al. 1996; Transportation Research Board 1997; Shirvani et al. 2019. Traffic on roads can create barriers or filters to animal movement and in some cases the leading cause of animal mortality. Chruszcz et al. 2003; Clevenger & Wierzchowski 2006; Northrup et al. 2012. Increased human use on new roads, including legal use during project implementation and illegal public use after project implementation, creates the potential for increased mortality and poaching of grizzly bears—impacts the EA fails to analyze. For these reasons, roads and human activity can negatively impact grizzly bear recovery. Lamb et al. 2018. Therefore, Proctor, et al. 2019 conclude:

> Motorized access management would be most beneficial in threatened populations, in areas where roads occur in the highest quality habitats, within and adjacent to identified linkage areas between population units, and in areas that are expected to exceed motorized route thresholds as a result of resource extraction activities.

Dead Laundry timber sale activities would further reduce grizzly bear connectivity and hinder population recovery in the Bitterroot Ecosystem. The FS fails to analyze how the proposed actions would affect grizzly bear habitat security and areas of demographic connectivity, such as discussed in Sieracki & Bader, 2022. Such an analysis requires discrete geographic parameters in which to measure habitat security, and motorized route densities. Yet, specific bear management units have yet to be identified in the NPCNF by any federal or state wildlife agency. Hence the Sieracki & Bader report, which identifies and displays Bear Management Units (BMUs) throughout the Bitterroot National Forest and Lolo National Forest and parts of the Beaverhead-Deerlodge National Forest. Proposed BMUs for the BE (Mattson 2021) and the secure habitat identified in Sieracki & Bader, 2022 provide a foundation for a more robust grizzly bear analysis both within the project area and considering cumulative effects on demographic connectivity.

Habitat conditions outside of official recovery areas are investigated in Bader and Sieracki, 2022—a report evaluating grizzly bear denning habitat and demographic connectivity in northern Idaho and western Montana.

The proposed road reconstruction, temporary road construction, and new permanent road construction will significantly impact grizzly bear habitat security and connectivity. The proposed permanent road construction would surely decrease grizzly bear habitat security and connectivity. Although 12 of the 14 miles of proposed road construction are supposedly located on previously decommissioned templates, there will be a net increase in open motorized routes and therefore, a decrease in grizzly bear habitat security and connectivity. Furthermore, since the EA fails to disclose the level or degree of accessibility on all the routes it constructs, reconstructs, reconditions, etc. it fails to portray an accurate estimation of the adverse impacts of

the project on grizzly bears, other species of conservation concern, and indeed many indicators of ecological integrity.

The proposed road reconstruction would adversely impact grizzly bears. Road reconstruction involves blading, brushing, and other improvements. Reconstruction of impassible roads reintroduces motor vehicle traffic to locations where it had subsided or diminished. Reconstruction of passible roads can increase traffic volumes on roads that were already under some level of motor vehicle use because reconstruction inevitably improves the surface of the road, inviting more public travel.

Although temporary roads are intended to be decommissioned within three years of the completion of logging operations, grizzly bear habitat security and connectivity are decreased when temporary roads and constructed and used. Habitat security and connectivity is not restored until temporary roads are successfully decommissioned. And the science shows that it takes years for resident grizzly bears to realize such benefits. In other recovery areas and connectivity areas where there are limitations on motorized access to promote grizzly bear recovery, the amount of temporary roads that the FS can construct and use at any given time must be within stated limits on motorized access.

The Beaver-Cedar Land Exchange FEIS recognized that "Consolidating high quality suitable habitat under one agency would have a beneficial effect for grizzly bear, wolf, boreal owl, lynx, wolverine, and harlequin duck in the Cedars Area." With the Dead Laundry timber sale, however, the FS would be nullifying any such benefits.

Merrill, et al., 1999 identify seasonal productive grizzly bear habitats in Idaho including the project area. The authors state that grizzly bears have good chances of surviving and reproducing in the BE "if bears in central Idaho are accorded protection from direct mortality comparable to that provided bears in other recovery areas."

OLD-GROWTH ECOSYSTEMS AND SPECIES ASSOCIATED WITH OLD GROWTH

The EA states:

> Only intermediate harvests in Old Growth Enhancements units will be conducted. No western redcedar ≥ 25" will be marked for removal. No western larch, western white pine, or ponderosa pine ≥ 21" will be marked for removal. No other remaining trees species present on site ≥21" will be marked for removal unless it is within 50' of another tree with symptoms of root disease, is adjacent to a root disease pocket, or is itself displaying signs of a root disease infection. Harvest prescriptions should attempt to manage stands at a minimum stand density index (SDI) of 25-35% of maximum SDI if existing on site. This equates to a stand somewhere between the onset of crown closure and the lower limit of full site occupancy (as defined by R4 FSH: 2409.17-2016-1; Chapter 9 and Powell 1999)."

In other words, a Douglas-fir tree which might be 250 years old or older, not properly socially distanced from any subjectively determined slight indicator of native root disease, is subject to logging. And that's only one example of old growth abuse. Another is—a 20" dbh western larch,

western white pine, or ponderosa pine of any age, exhibiting habitat value for old-growth associated wildlife, could be logged under the FS's "prescriptions."

Furthermore, the FS only weakly commits ("should") to a stand density of ¼ of natural in its logged old growth, which on the face of it isn't consistent with the Forest Plan. And other than the FS's vague commitment as quoted above, the EA fails to disclose an objective definition of "intermediate harvest." Nor does the FS make any commitment to monitoring the efficacy of its Dead Laundry old-growth "enhancement."

On the subject of old growth enhancement, the Vegetation Resource Report states:

> …areas that could benefit from treatment, for example stands getting filled in with smaller diameter shade intolerant species, would be thinned to promote desirable species and large diameter trees. …The treatments will be designed to retain enough overstory to maintain stand densities between the onset of crown closure and the lower limit of full site occupancy (as presented in Table 3 by Powell 1999, among others) while creating understory light conditions that allow for the establishment, and competitive advantage, of western redcedar in the understory and mid-story.

So on one hand the FS would apparently tweak old growth to favor seral western larch, western white pine and ponderosa pine by retaining mainly those species and opening up the forest canopy to enhance their growth, they would also be helping to establish shade tolerant western redcedar—without reconciling these conflicting goals. Part of the problem is the application of novel "desired conditions" which conflict with best available science. Even the descriptions of the normal range of conditions of the various forest types in Green et al., 1992 found in the project area do not include what the FS is trying to accomplish with its "enhancement" intent.

"Old growth enhancement" is nothing but a scam—a weak justification for logging large, old trees within old growth. The FS cites no evidence that is has successfully "enhanced" old growth consistent with any non-consumptive **old-growth values**. The FS doesn't even propose anything in the way of monitoring to verify its admittedly experimental "enhancement" theory. The same goes for the other "treatments" proposed for old growth, step down old growth or recruitment old growth (see Vegetation Resource Report Table 15).

With the large, landscape-level project Middle-Black in the early 2000s on the North Fork District (project area partially overlaps with Dead Laundry), the FS stated, "…in complying with old growth management guidelines described in Appendix H of the Forest Plan, treatment area adjustments were made to **avoid treating any** old growth stands…" (emphasis added). This was indicated in that FEIS (Id.):

All or portions of Treatment Areas Dropped	Acres	Proposed Treatment	Rationale for Dropping
2, 2A, 3, 7, 16, 19, 20, 26, 28, 31-33, 36-39, 41, 44, 55, 64, 72, 73, 75, 91, 95, 96	373	Timber Harvest or Prescribed Fire	Drop necessary old growth and recruitment old growth stands to meet Forest plan requirements.

Also, "Within harvest treatment areas and for the purpose of maintaining or improving habitat for wildlife species, **all large trees** (generally 20+ inches dbh or older than 150 years) and approximately half of the trees in other age classes **would be retained** across the landscape based on historic fire patterns." (Id., emphases added.)

In the Wildlife Report, the FS discusses enhancement in terms of forest plan/NRLMD compliance: "Field verification found proposed harvest areas lacked horizontal cover in multi-story or late successional forest for snowshoe hare habitat as per STANDARD VEG 6. Old-growth enhancements **may** improve understories and thereby **potentially** improve winter snowshoe hare." (Emphases added.) If the emphasized words sound speculative, it's because they are.

The DRAFT Revised Forest Plan includes a Monitoring Plan, with a Monitoring Question (MON-FOR-03): " Are vegetation treatments meeting the stand characteristics of old growth?" The Dead Laundry project assumes the answer is yes, because in jumping the revision gun it doesn't even propose monitoring the results of "enhancement."

Of course, the FS's "enhancement" paradigm also assumes that manipulated/logged old growth would contribute to other old-growth values, without any science to back it up. The FS even lacks any awareness that perhaps those other values might be assigned scientifically supportable metrics for measuring changes caused by "enhancement." These metrics could include associated old-growth characteristics or even occupancy by MIS or other indicators of old growth.

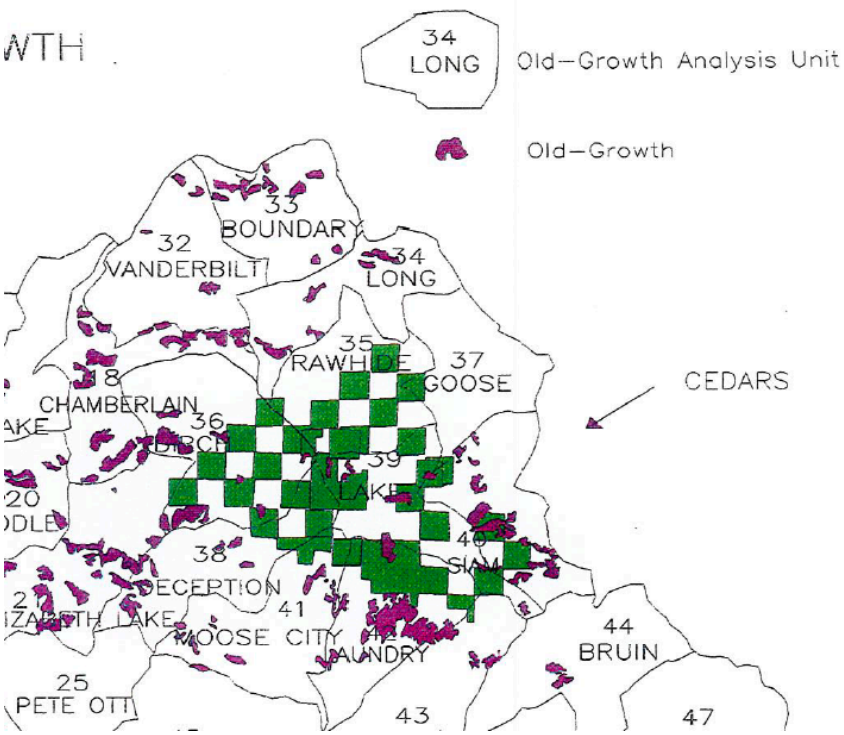
So the FS is implementing the DRAFT revised forest plan—but illegally, before the revision process has concluded.

Regarding Forest Plan consistency, the Vegetation Resource Report states:

> The Dead Laundry is comprised of six Old Growth Analysis Units (OGAU): 325, 338, 339, 341, 342, and 345. Existing old growth in these areas meets Forest Plan standards in 3 individual OGAUs (338, 341 and 342). However, with the addition of step down and recruitment, all OGAU's are exceeding the five percent requirement.

Yet how this alleged old growth, step down and recruitment are identified is a mystery, because the FS fails to provide any maps or stand IDs which anyone might use to verify these claimed numbers. There isn't even a map of the old growth in the EA or relevant specialist reports available on the project website.

The Beaver-Cedar Land Exchange FEIS states, "A comprehensive review of the Potlatch lands within the Cedars Area identified 842 acres of potential old-growth habitat." Below is a map from that FEIS:



Yet for Dead Laundry, the FS is apparently unable to identify any specific areas of old growth. No maps at all.

Table 8 in the Vegetation Resource Report says the existing, step down, and recruitment old growth amounts were "Derived from Old Growth GIS data managed by the Regional Office." How that derivation corresponds to the metrics that define old growth according to the Forest Plan is not explained. With the Reilly, 2006 memo the FS commits to performing field exams—not mere database analyses.

The Reilly, 2006 memo states:

> I recognize that the Clearwater National Forest has updated its own old growth database which indicates there is 18 percent old growth on the Clearwater – substantially more than the FIA estimate. However, **the accuracy of estimates from this database has not yet been determined**. (Emphasis added.)

The Dead Laundry analysis also does not explain potential discrepancies between its old-growth analyses and results with those from the Beaver-Cedar Land Exchange FEIS.

And whereas the EA claims, "The Proposed Action will not significantly impact existing, step down, or recruitment old growth because regeneration harvests are designed to avoid these areas" that is false. The FS admits as such: "This project proposes …road construction through mapped stepdown and old growth, or approximately 2.3 acres." This violates the Forest Plan's 10% forestwide old-growth standard, simply because the CNF is now less than 10%. The timber sale is **not**, as the EA claims, "…designed to meet Forest Plan Standards for Old Growth …*Clearwater Forest Plan Appendix H; 1993 Clearwater Forest Plan Lawsuit Settlement*".

And the FS claims that the timber sale "will not significantly impact existing, step down, or recruitment old growth" is also not credible simply because the FS hasn't even fully surveyed—applying proper criteria for old growth, step down old growth, or recruitment old growth to verify or rule out such conditions ("Acres are approximate and are based on coarse scale mapping of old growth GIS layers maintained by the regional office" - Vegetation Resource Report).

The FS lacks any established way of maintaining a publicly accessible inventory of old growth, let alone "step down" and "recruitment" old growth. The latter two categories need only meet very lax criteria, and as far as we're aware, in the 34+ years of Forest Plan implementation there's no documentation of the FS ever designating "step down" or "recruitment" old growth which has eventually/later fully met existing old growth criteria. These lesser FS categories are an empty promise to the public, to associated wildlife, and other old-growth values.

In 2020 FOC attempted to meet with the Forest Supervisor and the FS's qualified experts regarding its mysterious old-growth inventory, but ultimately the Supervisor refused to cooperate. This is documented in a FOIA "OG FOIA 2020-03332 Final Response", a letter "OG Meeting Request", our notes "OG Meeting notes_6-11-20" and email strings "Re_ Meeting Request_email 6-15-20.pdf" and "RE_ Meeting Request".

The Vegetation Resource Report states, "The Warm Moist PVG represents the majority of the project area…" Its Table 2 ("Existing and desired structure by size class for Warm Moist PVG in the Dead Laundry Project Area") is reproduced below:

Size Class in Diameter at Breast Height (DBH)	Existing (%) *	Desired Range (%) **
Seral Grass/Shrub	7	5 – 15
0 – 4.9"	2	15 – 25
5 – 14.9"	52	20 – 35
15 – 19.9"	32	15 – 25
20+"	7	10 – 35

* Size Class is from Region 1 VMap merged with stand exam data, TreeSize attribute
** Forest Plan Revision Desired Conditions for MA3 (Probert 2017), very similar to E1 MA

Likewise, "The Cool Moist PVG generally represents the higher elevation habitats that still support a majority of the tree species found within the project area. It covers nearly ¼ of the project…" Table 3 ("Existing and desired structure by size class for Cool Moist PVG in the Dead Laundry Project Area") is reproduced next:

Size Class in Diameter at Breast Height (DBH)	Existing (%) *	Desired Range (%) **
Seral Grass/Shrub	10	5-20
0 – 4.9"	5	15-40
5 – 14.9"	54	20-40
15 – 19.9"	29	10-35
20+"	2	5-10

* Size Class is from Region 1 VMap merged with stand exam data, TreeSize attribute
** Forest Plan Revision Desired Conditions for MA3 (Probert 2017), very similar to E1 MA

"The Warm Dry PVG represents **inclusions** within the project area **at only 5%**..." (Id., emphases added.). Table 4 ("Existing and desired structure by size class for Warm Dry PVG in the Dead Laundry Project Area") is shown next.

Size Class in Diameter at Breast Height (DBH)	Existing (%) *	Desired Range (%) **
Seral Grass/Shrub	17	5 – 15
0 – 4.9"	4	10 – 25
5 – 14.9"	48	20 – 40
15 – 19.9"	20	15 – 25
20+"	11	10 – 35

* Size Class is from Region 1 VMap merged with stand exam data, TreeSize attribute
** Forest Plan Revision Desired Conditions for MA3 (Probert 2017), very similar to E1 MA

So the Vegetation Resource Report shows the amount of trees that roughly approximate old-growth character (size class 20+") are below even the FS's "desired" levels. Yet Tables 10 and 11 show the Dead Laundry timber sale would reduce stands of size class 20+" even further below the FS's own "desired" levels. So much for "enhancing" old growth.

The FS's rationale for this is stated in the Vegetation Resource Report: "The Proposed Action will **move dominance types toward desired conditions** with a focus on western white pine in the Warm Moist and Cool Moist PVGs and ponderosa pine in the Warm Dry PVG, with western larch a likely component in most stands." (Emphasis added.) This is shown in, e.g., its Table 12 ("Comparison of the No Action and Proposed Action on composition by dominance type for the Warm Moist PVG"):

Forest Dominance Type	Desired Range (%)	No Action (%)	Proposed Action (%)
Ponderosa Pine	10 – 20	2	-0.1
Douglas-fir	2 – 5	10	-1
Lodgepole Pine	5 – 10	2	-0.2
Western Larch	15 – 30	0.1	-0.1
Grand Fir/ Western Redcedar	10 – 20	74	-11
Western White Pine	25 – 40	0	+13
Subalpine Fir/Englemann Spruce	1 – 2	2	-0.1

What the two yellow highlighted numbers show, in combination with the other tables we cite, is that the Dead Laundry project would replace large trees (20+" dbh) with planted seedlings of the FS's "desired" species (e.g., western white pine) in stands considered to be of the grand fir/western redcedar "Forest Dominance Type" in order to "move dominance types" in the desired direction as per the DRAFT Revised Forest Plan.

Again, a major flaw of the project is that the FS is attempting to implement DRAFT Revised Forest Plan Desired Conditions before the plan revision process is complete. Our comments on the DRAFT Revised Forest Plan recognized on this exact subject stated:

> Next, we see how the DEIS demonizes these "undesirable … types" of old growth: "(T)hese forest types are over-represented compared with historic conditions and often do not long persist as old growth, these old growth types should not be specifically protected by forest plan components." In other words this old growth is taken to be a sign or symptom of a forest out of whack.
>
> Under the Forest Service's skewed "thinking" there are too many of these, vaguely, "forest types" so the way to re-set the balance is clearcut the oldest sectors? When it's known that logging on the NPCNF has resulted in much less late-successional forest as a whole compared to the NRV, and thus fewer habitat opportunities for old-growth associated wildlife? When the agency has the opportunity to re-set this balance by focusing instead on younger, less rare habitats? This is very odd "thinking."
>
> And this is being promoted in the absence of the DEIS citing any data that actually proves that either these undesirable "forest types" or the subset of them which has the audacity to persist longer on the landscape are in fact out of balance. Where are your numbers?
>
> The DEIS continues, more explicitly identifying the Forest Service's "thinking" that it's best to log old growth:

> The current distribution of old growth types across the Nez Perce-Clearwater is considerably outside of natural range of variation for dominance types and should incorporate thinking about forested vegetation as a whole, rather than simply restricting activities within all old growth. To do this, plan components are designed to address our underrepresented dominance types while allowing harvest within overrepresented dominance types.

Again, the wording of this Guideline (MA2 and MA3-GDL-FOR-04) makes it clear **that the intent is to clearcut this old growth**: It "should not be managed using a regeneration harvest prescription if it can be converted to a desired old growth type."
How many acres of these "over-represented old-growth forest types" exist now on the NPCNF?

What is the NRV, in acres plus other relevant metrics, of these "over-represented old-growth forest types" on the NPCNF, and what is your scientific foundation for the NRV?

We are sill awaiting the FS's responses to those—and all other comments on the DRAFT Revised Forest Plan. In the present (Dead Laundry) case, the FS is implementing flawed old-growth "enhancement". However in additional, the FS is clearcutting stands not identified as old growth, but of size class 20+" which are already transitioning in the direction of old growth. This is because of the FS's arbitrary, unscientific "undesirable" attribution of large Douglas-fir, grand fir, western cedar, and other tree species. Since the FS's allocation of step down old growth and/or recruitment old growth is not transparent, project consistency with the OGAU forest plan standards is not demonstrated, in violation of NFMA.

See Juel, 2021, which comments on FS old-growth policies such as those for the CNF and as would be implemented in the Dead Laundry timber sale.

ACCESS AND TRAVEL MANAGEMENT

Project purpose and need fails to consider the FS duty to identify the minimum road system.

From multiple maps, the EA and other FS documents it's clear there are "existing road templates" (also called "existing unauthorized routes") of undisclosed extent in the project area. The FS failed to examined those, and other system roads to decide if they are needed or not, as would be determined with a Travel Analysis Process as per FSH 7709.55 Ch. 20, which is the first step towards identifying the minimum road system and complying with the Travel Management Rule under Subpart A (subpart A). (36 C.F.R. 212.5.) Also, the FS omitted fulfilling its regulatory duties under this rule from the project purpose and need, even though applicable statutory and regulatory requirements should shape a project's statement of purpose and need. When the agency takes an action "pursuant to a specific statute, the statutory objectives of the project serve as a guide by which to determine the reasonableness of objectives outlined in an EIS." *Westlands Water Dist. v. U.S. Dept. of Interior*, 376 F.3d 853, 866 (9th Cir. 2004).

Under subpart A, the FS has a substantive duty to address its over-sized road system. Identifying a resilient future road system is one of the most important endeavors the FS can undertake to restore aquatic systems and wildlife habitat, facilitate adaptation to climate change, ensure reliable recreational access, and operate within budgetary constraints. This underlying substantive duty must inform the scope of, and be included in, the agency's NEPA analysis. It's been 20 years since the FS finalized its subpart A rules, so it can no longer delay in addressing this duty. Yet, the FS fails to incorporate this duty, thereby failing to ensure the road system provides for the protection of national forest lands, reflects long-term funding expectations and minimizes adverse impacts. See 36 C.F.R. 212.5(b).

The FS must update its forestwide Travel Analysis Report for the district to reflect the increased risks to wildlife, specifically grizzly bears and grizzly bear connectivity from areas with high motorized route densities. It must also recognize that roads and motorized trails provide vectors for human wildfire ignitions, which is a risk that should be included in any Travel Analysis Process. The agency fails to consider a major human impact is human-ignited wildfires, which account for more than 90% of fires on national lands, and are five times more likely in areas with roads. Plus, roads can affect where and how forests burn and the vegetative condition of the forest.

Complying with subpart A is a win-win-win approach:

1) It's a win for the FS budget, closing the gap between large maintenance needs and inadequate (and declining) funding through congressional appropriations;
2) It's a win for wildlife and natural resources because it reduces negative impacts from the forest road system; and
3) It's a win for the public because removing unneeded roads from the landscape allows the agency to focus its limited resources on the roads we all use, improving public access across the forest and helping ensure roads withstand strong storms.

The document "K10-00011100917ClearwaterNationalForestMinimumRoadsStrategy .pdf"—a part of the Administrative Record for the CNF Travel Plan—states:

> Considerable progress has been made on the CNF toward the process of Travel Analysis described in Subpart A of the Travel Management Rule. **New projects will be analyzed using the "Travel Analysis Process" (TAP) as detailed in Travel Planning Handbook 7709.55 Chapter 20 in order to determine the minimum road system and opportunities for road decommissioning;** it will also prioritize road maintenance and indentify the need for upgrading and reconstruction of roads that will remain a part of the system. (Emphasis added.)

The Dead Laundry project should be considered a "New project() analyzed using the 'Travel Analysis Process' (TAP) as detailed in Travel Planning Handbook 7709.55 Chapter 20." However that process was not used for Dead Laundry. The Dead Laundry Transportation Systems Report instead refers to a "Nez Perce Clearwater National Forests Travel Analysis Report – September 22, 2015 …created from the Travel Analysis Process as outlined in Chapter 20 Travel Analysis, FSH 7709.55." That 2015 Travel Analysis Report (TAR) was not project-specific. The 2015 TAR states:

> The risk and benefit questions were used to determine numeric, consolidated assessment values of specific road segments across the forest. The initial risk and benefit assessment values are used in conjunction with the cost analysis, input from the public and partners, and previous commitments (such as road cost-share agreements or long-term special use permits) to identify opportunities to change the Forest or Grasslands road system. Some of the road-related issues identified by the public and other agencies can be addressed by risk and benefit questions relative to specific road segments, while **others would be more appropriately addressed** during forest plan revision or **during implementation of site-specific projects.**
>
> … Integrated restoration projects and commercial timber **sales represent some of the better opportunities to implement changes to the road system**.

(Emphasis added.) Yet the Dead Laundry EA and the Transportation Analysis Report utterly fail to present a comprehensive assessment of the risks posed by the project area transportation system, or examine opportunities to benefit the environment by reducing the road system—in any manner whatsoever let alone following the procedures outline in Chapter 20 Travel Analysis, FSH 7709.55. In short, during the CNF Travel Plan process (see below) and the 2015 TAR said it would be conducted during project-specific analyses such as for Dead Laundry, but for Dead Laundry the FS says it was already done in the 2015 TAR—even thought that document indicates it wasn't.

The CNF Travel Plan FEIS states:

> **It is at the project level scale that a site specific analysis of all roads both National Forest System and unauthorized can be studied and pertinent conclusions and recommendations made.** NFS roads that are deemed surplus to current needs and other road like features such as skid trails and old temporary roads can be identified and recommended for decommissioning and returned to natural resource production**. This process will continue under the guidance of FSM 7700 – Travel Management and FSH 7709.55 – Travel Planning Handbook to identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands**. (Emphases added.)

The Dead Laundry Transportation Analysis Report says, "The Forest System Roads in the analysis area are almost all identified in INFRA and mapped in GIS. The current map and inventory data are dynamic and will change **as more information is collected through field verification and road surveys**. There are a number of existing templates in the analysis area that have not been identified or mapped. Some of these were routes and/or skid trails used for timber harvest in the past and were never decommissioned." (Emphasis added.) Objectors have done a part of the FS's field verification and road survey job, in pointing out, in our comments on the EA, that at least significant portions of "Road" 74528 doesn't currently exist. And since the FS has chosen to not meaningfully respond to comments on the EA, at this juncture we cannot know what the agency is thinking with its flawed project-level transportation analysis.

Furthermore, it is completely non-transparent how the FS had apparently decided to adopt into its inventory of Forest System Roads so many of those the CNF Travel Planning map ("L02-00055080826aquiredNFlandsjbranning.pdf") merely identifies as "road – has a number."

It appears that the FS wants the boundary between its INFRA inventory of Forest System Roads and its accounting of nonsystem roads (e.g., "undetermined") to be highly permeable, so that it can add roads to its Forest System Road inventory without NEPA analysis and public disclosure—or even without conducting field reviews. The FS must carefully consider and document the road management objectives, environmental impacts, and social and economic benefits associated with any proposed addition before adding roads to the system. For roads that were previously identified for decommissioning in a NEPA decision, the FS must assess the Road Management Objectives, environmental impacts, and social and economic benefits associated with that road before identifying it for use as a temporary road and/or later adding it to the system as a closed or stored road. This necessary information is missing from the EA and project Transportation Analysis Report, without which the public is precluded from meaningful comment. The FS's proposal runs contrary to its own policy for assessing and adding roads to the system

One cannot tell if Table 4 of the project Transportation Analysis Report is a comprehensive list of all project area routes as listed in INFRA or any other inventory. It's likely not, because its title is "Proposed Road Work and Access Control Mitigation." (Also see "RE-Dead Laundry project information-Boykin" included with documents submitted as part of this objection.)

The Dead Laundry Project Summary of Determinations for Biological Assessments (BA) states, "Prior to this project development, 112 miles of roads in the project area were previously decommissioned." However this is not substantiated with any map or other reference to pinpoint the location of these former 112 miles of road.

The project Transportation Analysis Report states, "Roads require maintenance and additions to the existing road system add costs. Cost includes any expenditure in the repair or upkeep of a road necessary to perpetuate the road and provide for its safe use." Yet despite identifying dozens of roads "likely not needed" in Table 5, exactly zero of them are to be decommissioned with this project—regardless of their assessed risk factors.

And nowhere does the Dead Laundry EA or Transportation Analysis Report analyze or disclose the risks or environmental impacts of the high-risk roads the FS will leave on the landscape. The EA states, "Roads are a source of chronic sedimentation of stream channels through erosion of fill, cut slopes, and of the driving surface, especially if not adequately maintained. It can be logically inferred that **the continued use of roads within project area RHCAs long after the project is completed will continue to have adverse effects to fish and fish habitat through sediment delivery to streams.**" (Emphasis added.)

And as the Dead Laundry BA indicates:

> Decommissioning roads leads to a decrease in sediment input to area streams, this can lead to improvement of aquatic habitat and a decrease in cobble embeddedness. This can lead to an increase in rearing habitat for bull trout in the project area.
>
> …Forest roads can be chronic sources of sediment because road construction, use, and maintenance compact soils, reduce infiltration, intercept, and concentrate surface and subsurface runoff, and limit the growth of vegetation. Road ditches can alter natural drainage patterns and move sediment directly from roads into streams (Wemple et al., 1996). Also, roads can increase the frequency and magnitude of landslides by undercutting the base of unstable slopes; intercepting, diverting, and concentrating runoff to unstable hillsides; and through damage caused by plugged culverts that cause water to overtop the road.

The CNF Travel Plan FEIS identified a Desired Condition: "All routes available for public motorized travel must be a part of the transportation system and must be designated open for motorized travel, including the type of vehicle and season of use, according to 36 CFR 212." The FS has not demonstrated the project is consistent with that Desired Condition. The project Transportation Systems Report states, "This analysis incorporates by reference the Decision for the Access Travel Management (ATM) in the FEIS of the Clearwater National Forest Travel Planning August 2011."

The EA states, "25 miles of the total temporary road construction would be on **existing unauthorized routes**. Road construction would be conducted on 12 miles of **previously decommissioned and/or unauthorized routes** on the landscape; 2 miles of road construction would occur in areas without a current road template." (Emphases added.)

Road inventory issues

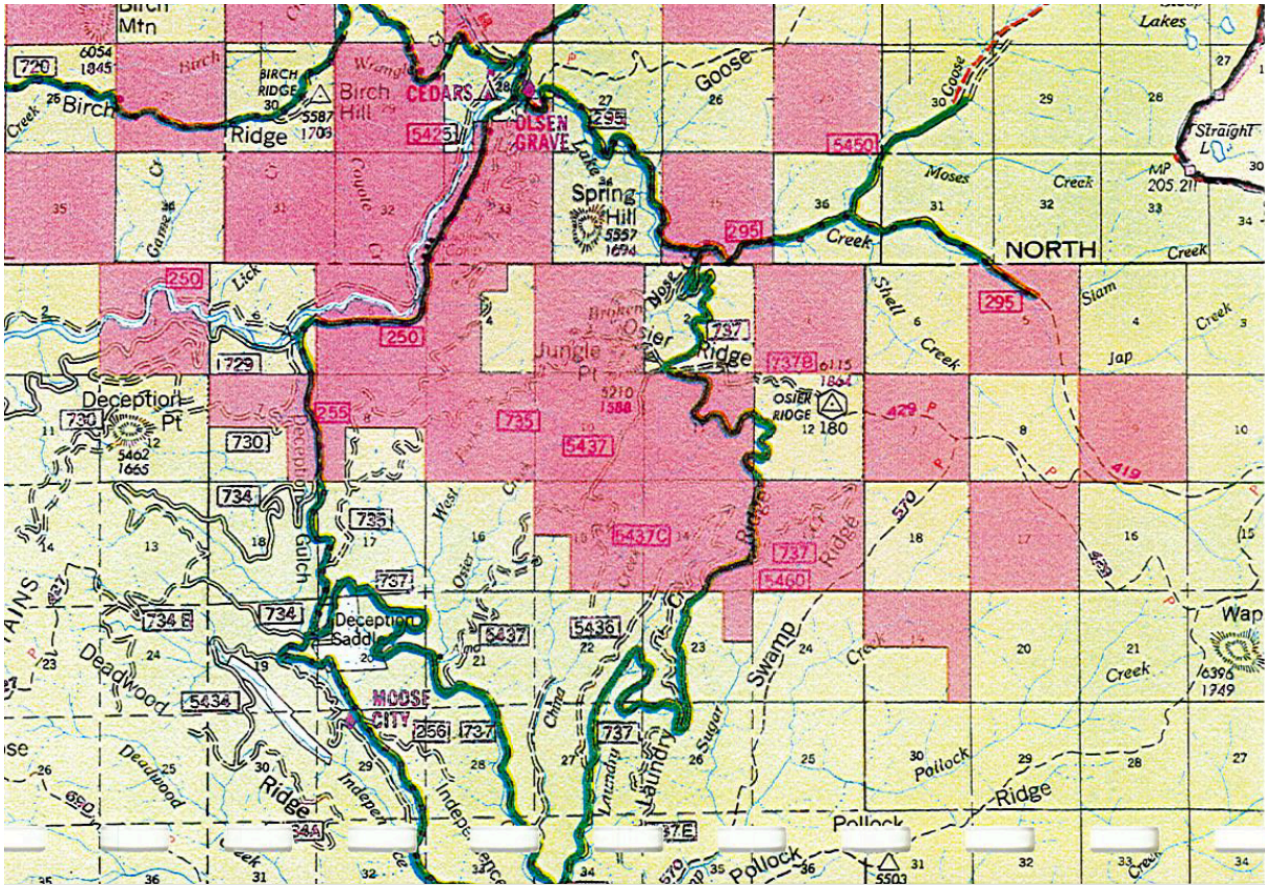
Large portions of the Dead Laundry project area were acquired in a 1996 land exchange with the Potlatch Corporation. In turn, Potlatch had recently acquired the lands from DAW Corporation. The Clearwater National Forest August 2011 Travel Plan FEIS discussed roads in the acquired land:

> Roads on or associated with lands formerly owned by DAW Corporation in the upper North Fork that were acquired in the 1996 Beaver-Cedar land exchange are being evaluated for appropriate designation or restrictions. Since these roads were primarily on lands in private ownership, they have not previously been evaluated in Clearwater National Forest project decisions.
>
> …In 1996 the Clearwater NF acquired 25,067 acres of former DAW Forest Products lands in the upper North Fork Clearwater River under the Beaver-Cedars Land exchange. These parcels had 26 different roads totaling 84.64 miles. Since these roads were totally or primarily on private lands they have not received an interdisciplinary Forest Service travel analysis and are included in the "UND" category in the existing condition.

According to the Travel Plan FEIS, "UND" means "undetermined." Its Glossary definition of "UND" explains:

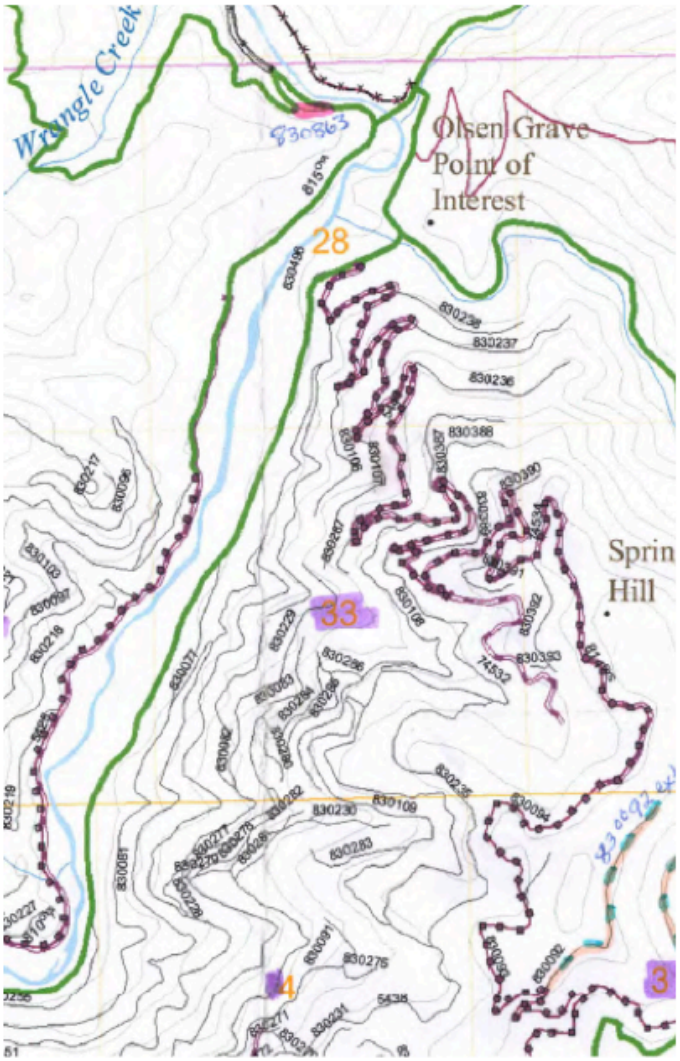
For roads added to the system after 2005, such as the former DAW lands, the TravCode was listed as UND since no travel decision had been made. UND also includes some additional routes that were suggested as part of the Travel Planning process, roads that have long been overgrown and are not travelable with vehicles, and storage trails that are still considered part of the trail system but have not been maintained and are generally not travelable with vehicles.

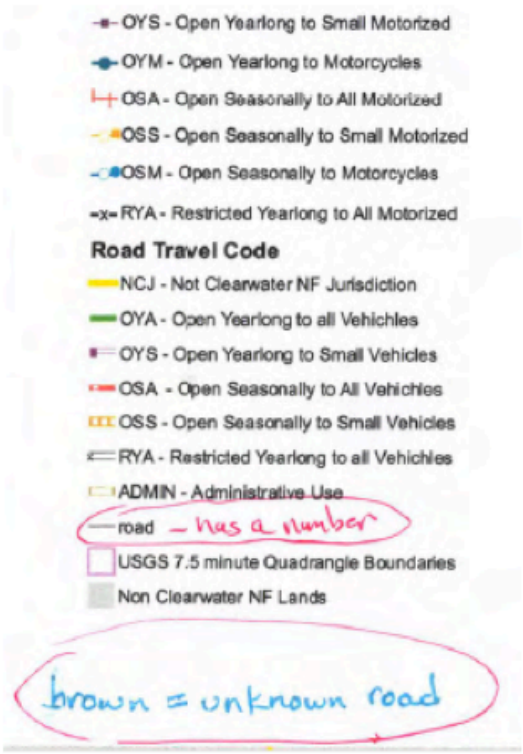
The 1996 Beaver-Cedars Land Exchange Final EIS did not include a detailed analysis of the environmental liabilities of the roads on the lands acquired in the exchange. Below is a portion of a map from the Beaver-Cedar Land Exchange FEIS, covering the Dead Laundry project area. The sections colored red are the lands acquired from Potlatch in the exchange.



Obviously that map doesn't show anywhere near the 84.64 miles of road that existed on the acquired lands at the time of the exchange, according to the Travel Plan Final EIS.

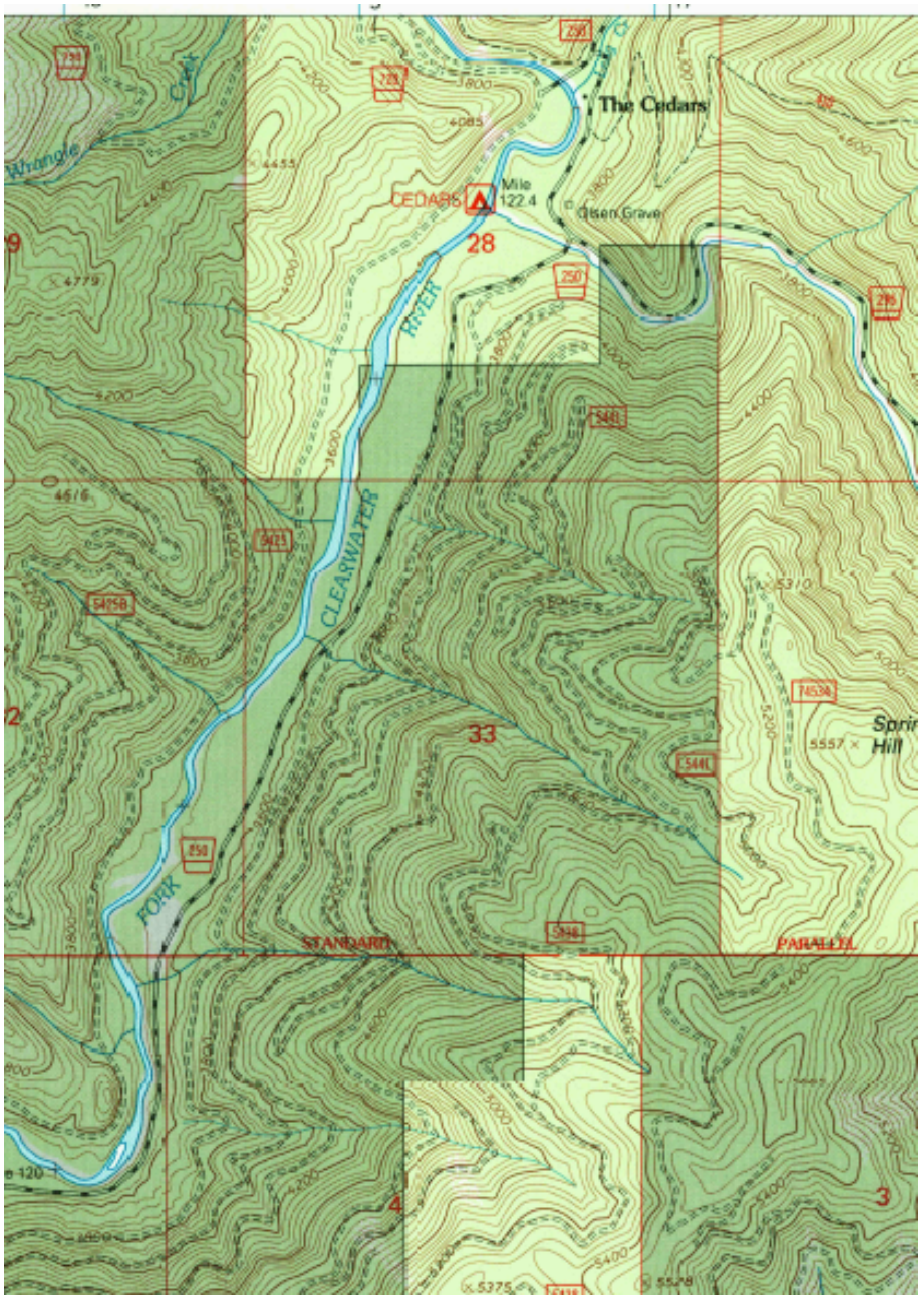
During the above-mentioned Clearwater National Forest (CNF) travel planning process, the FS did begin to examine roads in the acquired lands, producing more details of the road situation. We refer to a CNF Travel Planning map ("L02-00055080826aquiredNFlandsjbranning.pdf"). A portion of that map is pasted below, followed by its key. It shows a portion of the Dead Laundry project area—the Cedars Campground near the confluence of the North Fork and Lake Creek is near the top.



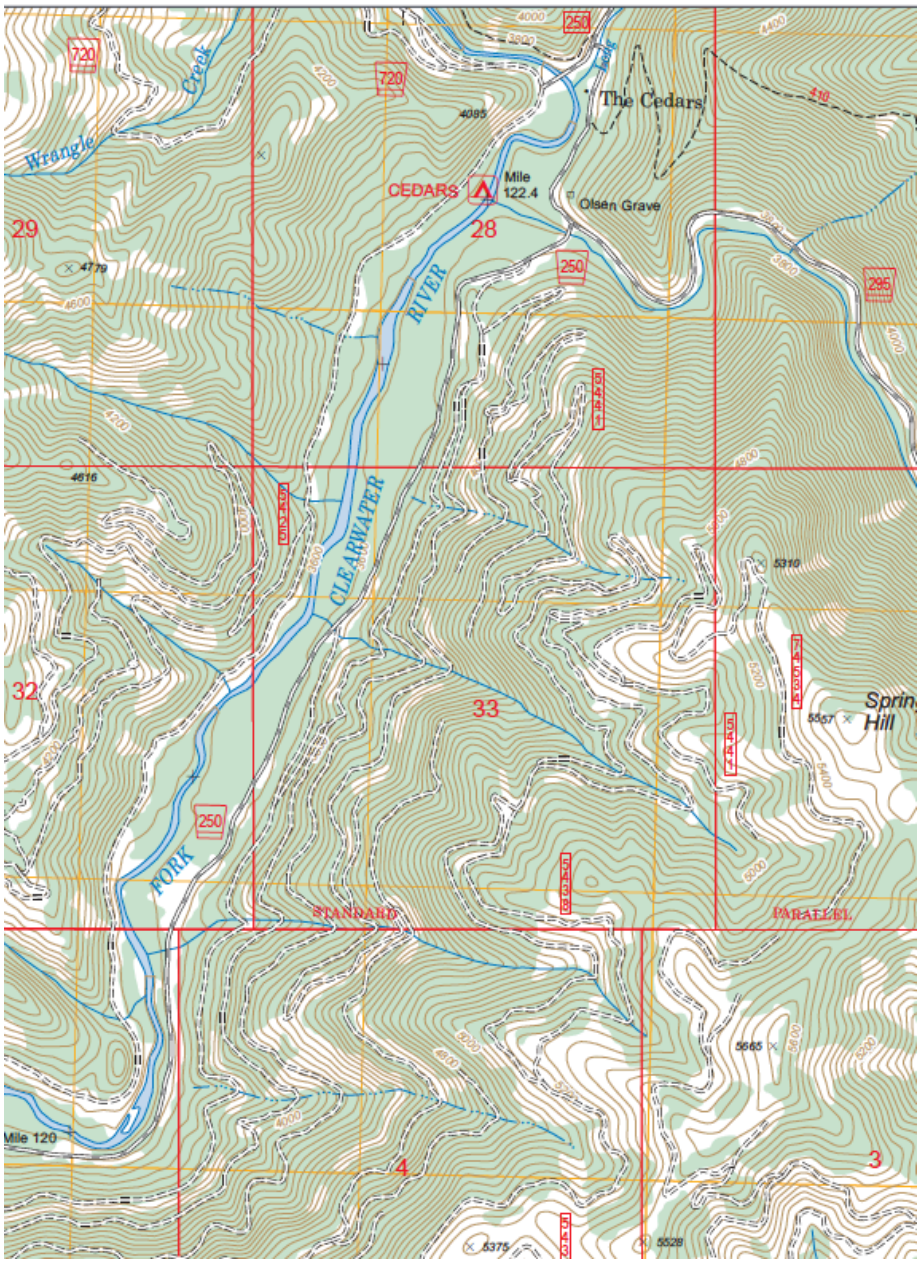


With the exception of a sliver of land near the Cedars Campground, the above area was part of the acquired lands. This reveals the high road density left over from the days of DAW ownership/management.

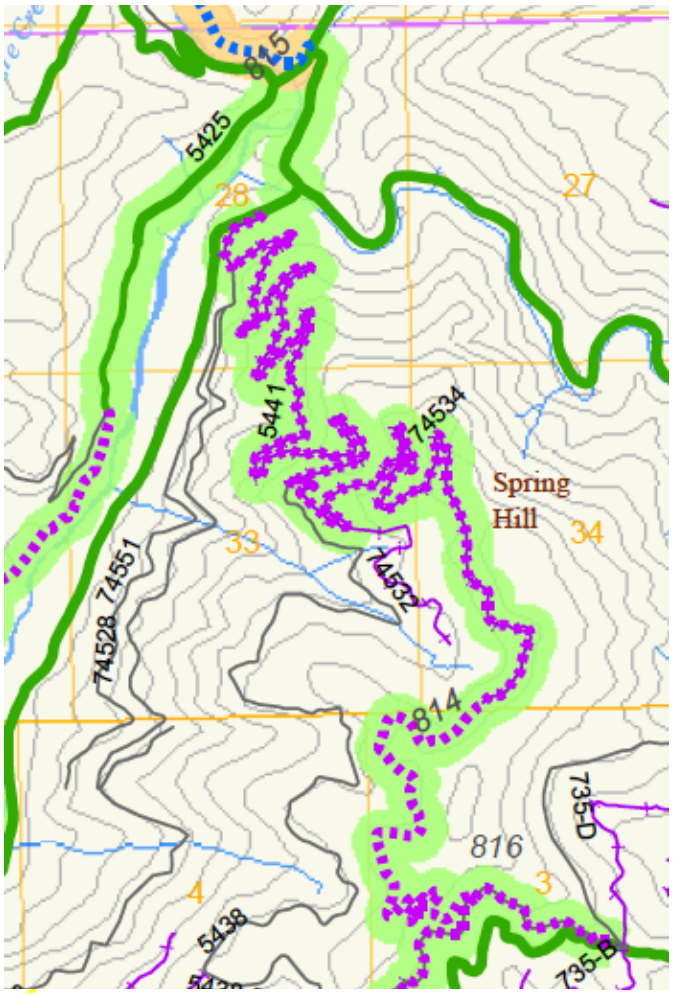
Below is a portion of the 7.5 minute Osier Ridge Quadrangle map (dated 1994) showing the same area, also showing a high road density. There's a stream shown on that map, under the word "Standard" near the bottom. That map shows up to nine road crossings of that tributary of the North Fork. The FS apparently has no inventory data on the conditions of those road/stream crossings.



Next is the very same portion of the 7.5 minute Osier Ridge Quadrangle map currently downloadable from the FS website at: https://data.fs.usda.gov/geodata/rastergateway/states-regions/states.php ("Updates to Transportation 1994, Updates to Boundaries 2015") showing the same extensive road network.



A portion of another CNF travel planning map ("090604northforkeast36x48.pdf") is pasted next, and it displays the same portion of the Dead Laundry Project Area, along with parts of its key.



Legend

- Administrative Forest Boundary
- Administrative Districts
- Highways
- border_routes
- USGS 7.5 minute Quadrangle Boundaries
- 200 foot contour intervals

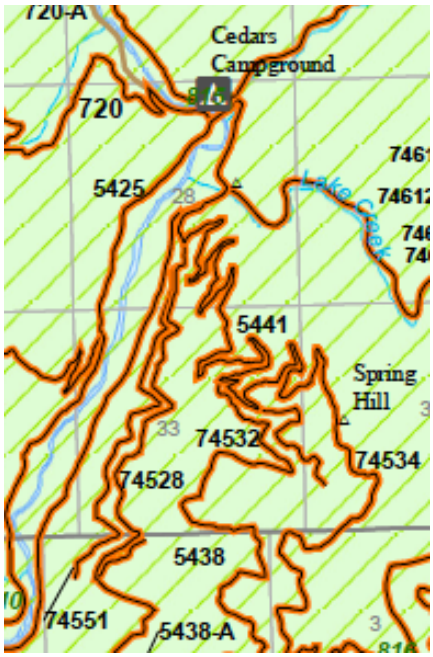
Roads - Alternatives B, C and D

- Open Yearlong to Vehichle, ATV and Motorcycle
- Open Seasonally to Vehichle, ATV and Motorcycle
- Open Yearlong to ATV and Motorcycle
- Open Seasonally to ATV and Motorcycle
- Restricted Yearlong to Vehicle, ATV and Motorcycle
- Administrative Use
- Non Clearwater Jurisdiction

Trails Alternative B

- Open Yearlong to Vehicle, ATV and Motorcycle (Coincident with Roads)
- Open Seasonally to Vehicle, ATV and Motorcycle (Coincident with Roads)
- Open Seasonally to Motorcycles
- Open Seasonally to ATV and Motorcycle
- Open Yearlong to Motorcycles
- Open Yearlong to ATV and Motorcycle
- Restricted Yearlong to Vehicle, ATV and Motorcycle

The above map displays motorized summer use contemplated—and later adopted by the CNF Travel Plan Record of Decision (ROD). It doesn't display the same extent of the road network as the previous map. And inexplicably, it has some roads labeled "Non Clearwater Jurisdiction" even though the map was produced approximately ten years after the land exchange. We now refer to roads 74528 and 74551, labeled on the western part of this map. For the purpose of helping to identify which road is 74528 and which is 74551, below we paste a portion of another map, "North Fork Snow1" which is the CNF's Over Snow Vehicle Use Map 2014. This is a map created following from the CNF Travel Plan ROD. The portion of that map shown is once again of this same area.



From the above maps, it is clear that the CNF's Travel Planning process allowed over-snow use on Roads 74551 and 74528, whereas the CNF Travel Plan ROD did not authorize summer motorized use.

Further, CNF Travel Planning map ("L02-00055080826aquiredNFlandsjbranning.pdf") we display above does not attribute a Road Travel Code to either 74551 or 74528, however the key ambiguously identifies them (and many others) as simply "road – has a number." (Emphases in the key are the FS's.)

Next, we observe the project Transportation Systems Report Table 4 lists those two roads:

Road	BMP	Length	Road Work	Status	ATM	OPML	Access Control
74528	0.000	2.100	Reconstruction	EXISTING	OYS	ML-1	No Issue
74528	4.300	1.376	Reconstruction	EXISTING	RYA	ML-1	No Issue
74528	5.676	0.675	Reconstruction	EXISTING	RYA	ML-1	No Issue
74551	4.781	1.440	Reconstruction	EXISTING	RYA	ML-1	No Issue

RYA means "Restricted Yearlong to All Vehicles" and OYS means "Open Yearlong to Small Vehicles." This means all segments are supposedly restricted at all times from motorized use, except for the first 2.1 miles of 74528, which is open yearlong to small vehicles. However, this is inconsistent with the CNF Travel Plan ROD, as shown in map "090604northforkeast36x48.pdf" (above), which authorized none of those segments open—at least not 2.1 miles of 74528. The project Transportation Systems Report[3] includes incorrect information. In fact except for saying the report incorporates the CNF Travel Planning ROD, it—along with the Dead Laundry EA itself—fails to demonstrate project consistency with the 2011 Travel Plan ROD.

Our EA comments included observations we made in the project area, specifically concerning several roads specified in the Project Proposal for "reconstruction" as part of the Dead Laundry Project. The very first road evaluated, as discussed on pages 1-4 of our EA comments Appendix A, was discussed in detail. Because no map in the EA or specialists reports displayed road numbers in enough detail, our comments did not mention the official FS number identification of that route. Only from later inspection of other maps (discussed above, from other sources) were we able to discern that this route was 74528. The gist of the concerns we expressed in our EA comment is: the FS was treating 74528 as an "existing road" that needed "reconstruction" but our on-the-ground survey of that segment revealed that it was a road that had been decommissioned. Therefore if the FS were to access timber via this route as proposed in the Dead Laundry EA, the work needed would be—for all intents and purposes—road **construction**. In addition, our field survey in 2021 found that Road 74551 is also in a decommissioned condition, in contrast to the "existing" status claimed by the FS.

The FS's own documents make our point, if only partially. The Travel Plan record document "K1-0-00004-070530-dgober070529RoadCoreData.pdf" indicates that about 2.1 miles or Road 74528 had been decommissioned:

ROAD NO	NAME	BMP	EMP	SYSTEM	JURISDICT	STATUS	DISTRICT MGT	DISTRICT ADM
74528	CEDARS 1	0	2.1	NFSR - NATIONA	FS - FOREST SE	EX - EXISTING	010503	010503
74528	CEDARS 1	2.1	2.3	NFSR - NATIONA	FS - FOREST SE	DE - DECOMMIS	010503	010503
74528	CEDARS 1	2.3	4.3	NFSR - NATIONA	FS - FOREST SE	DE - DECOMMIS	010503	010503
74528	CEDARS 1	4.3	6.6	NFSR - NATIONA	FS - FOREST SE	EX - EXISTING	010503	010503

(We are assuming that for these documents BMP is beginning mile post and EMP is ending mile post) The Dead Laundry Travel Systems Report **omits that decommissioned segment**:

Road	BMP	Length	Road Work	Status	ATM	OPML	Access Control
74528	0.000	2.100	Reconstruction	EXISTING	OYS	ML-1	No Issue
74528	4.300	1.376	Reconstruction	EXISTING	RYA	ML-1	No Issue
74528	5.676	0.675	Reconstruction	EXISTING	RYA	ML-1	No Issue

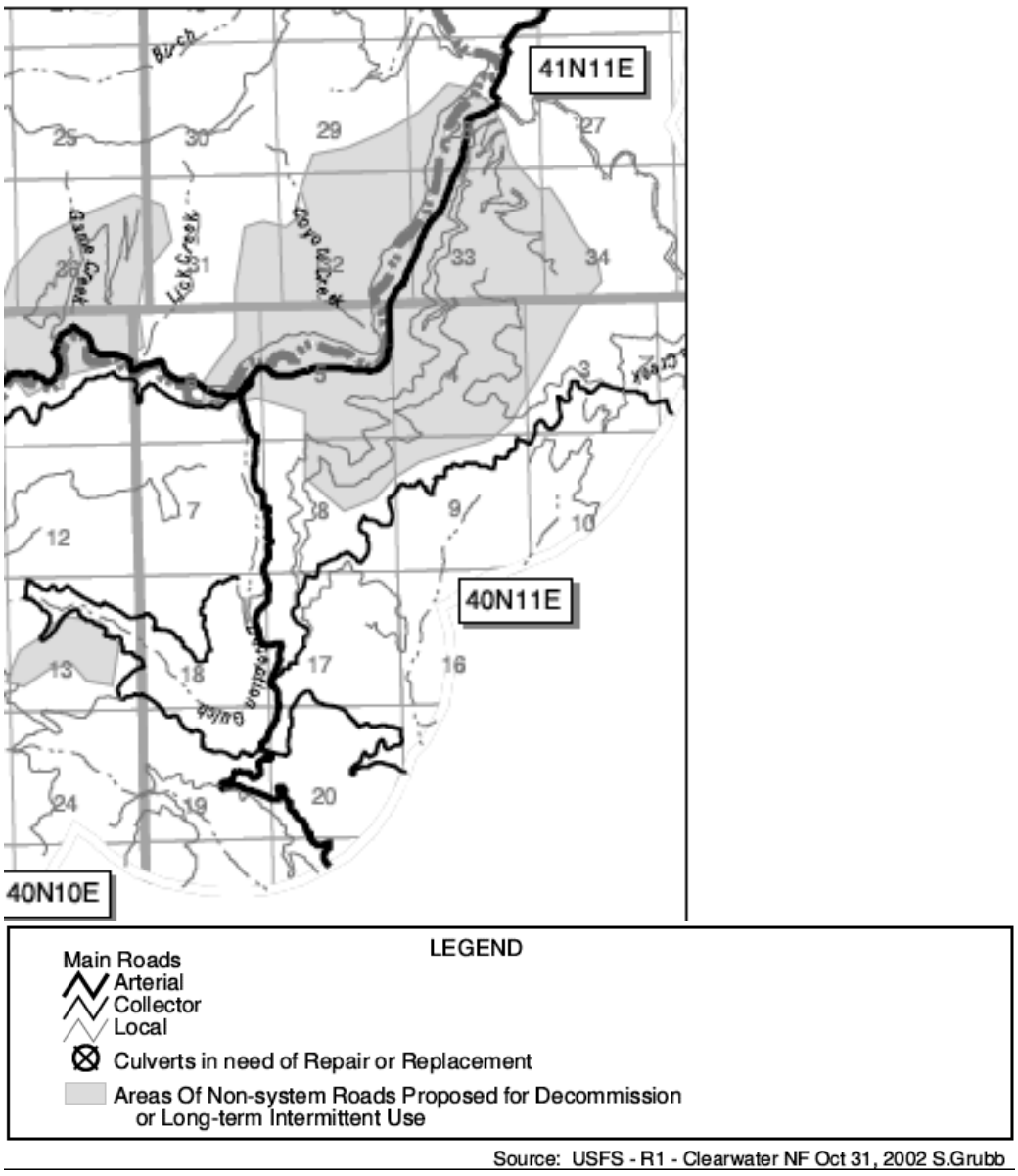
What our EA comments Appendix A points out is, even that "K1-0-00004-070530-dgober070529RoadCoreData.pdf" spreadsheet does not accurately represent the current road

[3] The Dead Laundry Transportation Systems Report states, "This analysis incorporates by reference the Decision for the Access Travel Management (ATM) in the FEIS of the Clearwater National Forest Travel Planning August 2011.

condition. Whereas the spreadsheet indicates the decommissioned part begins at about two miles along, our observations show at least two major RHCA crossings had been entirely removed well before two miles, and the old road surface had been outsloped to at least partially conform to the former contour of the natural slope.

Nowhere does the FS admit what's obvious to us—to use the decommissioned segment as proposed, work fitting the definition of **new construction—including many tons of road fill and culvert installations**—would be necessary. (See our EA comments Attachment A, first road discussed pp. 1-4.) Our EA comments Appendix A also identifies flaws of FS assumptions for "reconstruction" of other project area routes.

The early 2000s Middle-Black project FEIS included a map of "Middle-Black Watershed Restoration, and below we've reproduced part of it and its key:



The above reveals that a portion of what has now become the Dead Laundry project area was one of the "Areas Of Non-system Roads Proposed for Decommission". Might that explain the decommissioned status of roads the FS says would merely be "reconstructed" FOC has observed on the ground?

And while the project Transportation Systems Report has no map, the EA map (Figure 5: Transportation detail of the Dead Laundry Project Area) and the 3/12/2020 Dead Laundry Road Map issued with the Project Proposal fail to recognize these facts.

FOC monitored areas where the FS proposes various levels of road work. We photographed some of these sites and mapped their GIS location where available, also using the FS road system inventory provided to FOC in response to a previous Freedom of Information Act request. Among FOC staff's observations were road templates that the FS maps as "reconstruction" require such significant work that it rises to the level of road construction. Also, some proposed "maintenance" would more accurately be described as reconstruction. Also, some sites places were on a road template where the FS had not mapped any road template. We also found road prisms of previous roads that now are essentially wetlands—they have soggy soils, plants that thrive in soggy soils, and standing water—or sometimes even running water—on the old template, where roadwork would mean filling a small wetland. Such information did not appear in the Environmental Assessment and other reports. These findings are addressed in the folder **FOC 2021 Dead Laundry monitoring_Bilodeau report**, which contains the report, pictures taken, an excel spreadsheet that explains and contains GPS information from the pictures, and various maps. This folder is being mailed from our Moscow, Idaho office and is incorporated with this objection.

Our 2020 road surveys as documented in our EA comments Appendix A, and our September 8-9, 2021 surveys as documented in "Dead Laundry Monitoring_FOC Sept 8-9_2021.pdf", were not a fully comprehensive survey of road conditions in the project area. But they reveal that the EA presents an extremely inadequate picture of the existing conditions of project area roads.

Deception OHV Trail

A "decision to construct an off-highway vehicle (OHV) trail in the vicinity of Deception Gulch was made on July 19, 1999 in the Decision Memo for the "DECEPTION GULCH ROAD OBLITERATION / OHV TRAIL" project." (August 2003 Decision Memo 814.doc, obtained under FOIA from the FS.) Decision Memo 814.doc further states:

> The original proposed location of the OHV trail involved crossing a number of drainages on mid-slope locations where large fills were to be removed during road obliteration. Building an OHV trail across these locations would involve considerable soil disturbance and/or construction of structures to avoid fording the creeks with OHVs. These structures are expensive to construct and maintain.
>
> …During survey and design of the OHV trail, several potential construction and maintenance problems were identified that would be costly to resolve during construction and involve long-term maintenance costs. Alternative routes were located that would avoid

the problem areas, but would result in essentially the same 30-mile OHV trail. These changes would be consistent with the findings in the original project Decision Memo.

In response to FOIA, the FS told us that Decision Memo 814.doc was never signed and we assume never implemented. Furthermore, they told us they had destroyed the original July 19, 1999 Decision Memo for the Deception Gulch Road Obliteration / OHV Trail project, so it was not provided to us in response to our FOIA. So we are unable to determine which roads the 1999 DM had designated for obliteration (decommissioning)—and according to the FS, they don't know either because they have erased this chapter of history from their Forest Plan implementation record of the project area. Again, this is an example of unresolved and undisclosed cumulative environmental impacts.

In 2015 or 2016, the FS further altered another portion of the Deception OHV Trail system (see "Deception OHV DM 2015.pdf"), which utilizes some a mix of old roads and trails. The Dead Laundry analysis does not discuss that project's BMP implementation or completion.

EA FAILS TO DISCLOSE EXISTING CONDITIONS

ROCKY MOUNTAIN ELK

Since the FS admittedly has not utilized a comprehensive and accurate road inventory for the project area, it cannot possibly conduct a cumulative effects analysis in compliance with NEPA or forest plan direction for elk. And we note here that the FS represents its forest plan direction for elk as being its proxy for grizzly bear habitat analysis.

The science is clear that motorized access via trail, road, or oversnow adversely impact elk habitat. Servheen, et al., 1997 indicate that motorized trails increase elk vulnerability and reduce habitat effectiveness, and provide scientific management recommendations.

Also, the EA fails to provide a meaningful analysis of cumulative impacts of recreational activities on elk. Wintertime is an especially critical time for elk, and stress from avoiding motorized activities takes its toll on elk and populations.

Scientific information recognizes the importance of thermal cover, including Lyon et al, 1985. Christensen et al., 1993 also emphasize "maintenance of security, landscape management of coniferous cover, and monitoring elk use…" This USFS Region 1 document also states, "management of winter range to improve thermal cover and prevent harassment may be as important as anything done to change forage quantity or quality."

And Black et al. (1976) provide definitions of elk cover, including "Thermal cover is defined as a stand of coniferous trees 12 m (40 ft) or more tall, with average crown exceeding 70 percent. Such stands were most heavily used for thermal cover by radio-collared elk on a summer range study area in eastern Oregon (R.J. Pedersen, Oregon Department of Fish and Wildlife—personal communication)." Black et al. (1976) also state:

> Optimum size for thermal cover on summer and spring-fall range is 12 to 24 ha (30 to 60 acres). Areas less than 12 ha (30 acres) are below the size required to provide necessary internal stand conditions and to accommodate the herd behavior of elk.
> …Cover requirements on winter ranges must be considered separately and more carefully. Animals distributed over thousands of square miles in spring, summer and fall are forced by increasing snow depths at higher elevations to concentrate into much restricted, lower-elevation areas in mid- to late-winter. Winter range, because of its scarcity and intensity of use, is more sensitive to land management decisions.

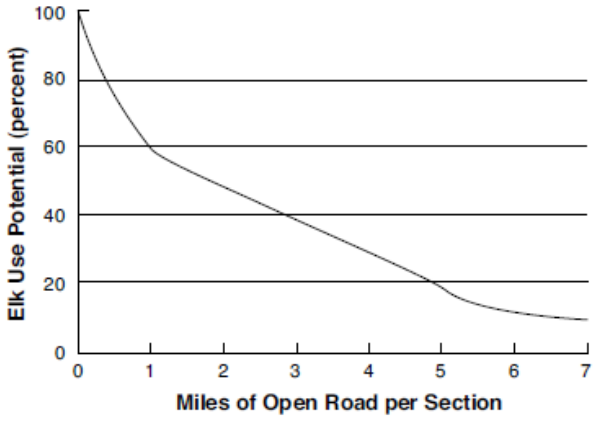
Regarding Black et al. (1976) conclusions, Thomas et al., 1988a state, "We concur. New research on elk use of habitat on summer and winter ranges has become available, however (Leckenby 1984). Land-use planning requirements indicate that a model of elk winter-range habitat effectiveness is required."

Thomas et al., 1988a also state:

> Thomas and others (1979, p. 104-127) defined two types of cover: thermal and hiding. Thermal cover was "any stand of coniferous trees 12 meters (40 ft) or more tall, with an average canopy closure exceeding 70 percent" (p. 114). Disproportionate use of such cover by elk was thought to be related to thermoregulation. Whether such thermoregulatory activity occurs or is significant has been argued (Geist 1982,Peek and others 1982). In the context of the model presented here, arguing about why elk show preference for such stands is pointless. They do exhibit a preference (Leckenby 1984; see Thomas 1979 for a review). As this habitat model is based on expressed preferences of elk, we continue to use that criterion as a tested habitat attribute. We cannot demonstrate that the observed preference is an expression of need, but we predict energy exchange advantages of such cover to elk (Parker and Robbins 1984). We consider it prudent to assume that preferred kinds of cover provide an advantage to the elk over nonpreferred or less preferred options.

Christensen, et al. (1993) is a Region One publication on elk habitat effectiveness. Meeting a minimum of 70% translates to about 0.75 miles/sq. mi. in key elk habitat, as shown in their graph:

5. Levels of habitat effectiveness:



Also, Ranglack, et al. 2017 investigated habitat selection during archery and rifle hunting seasons.

The Forest Plan included a “Data Requirement”: “Field Verification and Mapping of Elk Winter and Summer Range Habitat” to be accomplished by 1989. It also includes “Research Needs” for wildlife including elk. The FS has not properly prioritized most of this forest plan direction.

The Forest Plan reads:

> 5. Wildlife and Fish
> a. Provide the proper mix of hiding and thermal cover, forage, and protection from harassment during critical periods on big-game summer range (primarily elk), in accordance with criteria contained in the "Guidelines for Evaluating and Managing Summer Elk Habitat in Northern Idaho."
>
> b. Rehabilitate key big-game winter range to meet elk population goals. (Also see Management Areas C3 and C4).
>
> Big-Game Summer Range/Timber - In proposed El and E3 Management Areas, the minimum standard is to provide 25 percent elk habitat potential. New openings (regeneration cuts) can be planned adjacent to former openings as long as the former opening is certified as stocked and the area meets a minimum of 25 percent elk habitat potential after implementation of the proposed activity.
>
> For example, in the El Management Area in Chapter III, the minimum standard for summer elk habitat is to maintain 25 percent of potential habitat capability. In areas where current potential is less than 25 percent, the plan provides direction to increase potential to at least minimum standards as new activities are planned. It recognizes in Chapter IV, Section B, that not all areas will meet minimum standards due to past management practices. However, as we make new entries in those areas, activities should be designed and access managed to bring the potential back to a minimum of 25 percent.
>
> It is also recognized that there are areas within El that have quality elk habitat currently higher than 25 percent. In these cases, Rangers are encouraged to maintain this quality through judicious planning and road closures.
>
> The same basic philosophy will be applied to water quality standards, visuals, T & E habitat, old growth, and other resource areas where the Plan specifies minimum acceptable standards.

For Management Area E1 the Forest Plan requires:

> Manage for a minimum of 25 percent maximum elk potential habitat effectiveness. During Plan implementation and further analysis, determine whether remaining areas of El have potential for providing elk habitat. When analysis shows elk potential is limited by factors other than National Forest management, determinations may be made not to manage for

elk. When habitat conditions warrant, managers are urged to exceed the 25 percent habitat standard. See Forestwide General Standards, in Chapter II.

Design and develop road systems in accordance with area transportation plan[4] procedures.

Forest Plan forestwide standards require:

Manage tree openings created by even-age timber harvest as follows:
(1) Size of openings - Openings created will normally be 40 acres or less, see Regional Guide for exceptions:
(2) Dispersal - The objective is to disperse openings so that adjacent stands will represent at least three size classes, see Regional Guide;
(3) Duration of openings - consider an opening no longer an opening when the density and height of the vegetation and watershed conditions meet the resource management objectives of the area.

The ID Team must assure that unit design optimizes wildlife objectives, both short-and long-term, within the overall objectives of the management area. Other resource requirements and objectives such as visual, watershed, silvicultural, etc., also must be met as applicable. The dispersal of timber size class objectives in the Regional Guide must be met.

Design timber sales to consider cost-effectiveness while maintaining the long-term sustained yield and protecting the soi1 and water Resources.

Guide vegetation management by the Vegetation Management Practices and Habitat Type Guidelines (Appendix A), and the Northern Regional Guide.

Eliminate the watershed restoration backlog by 2000.

The Wildlife Report states, "Motorized route densities are calculated by motorized route miles/access as designated in Travel Plan **and on-the-ground existing conditions**." (Emphases added.) It is these on-the-ground existing conditions that the FS has inadequate knowledge of, even admittedly, making compliance with the Forest Plan impossible.

The Wildlife Report states, "However, given the current consensus of local big-game biologists with IDFG that the lack of forage is limiting the herds and the ongoing studies on fitness and summer nutrition (Cook and Wisdom 2018), the benefits of creating additional high-quality forage appear to outweigh the potential negatives associated with openings not being adjacent to a full 800 feet width of cover."

The Wildlife Report misrepresents this unpublished, non-peer reviewed Cook and Wisdom report as "consensus." It fails to note such statements in the report as, "We note that these results are preliminary…" The Wildlife Report also fails to reconcile this statement: "Nutritional value

[4] Where is the "area transportation plan"? The project Transportation Systems Report doesn't mention it.

of habitat was highest in the North Fork Clearwater Study Area…"

FISHER

The Wildlife Report acknowledges a high degree of Dead Laundry project impact on fisher:

> The combination of a decrease in mature habitat and an increase in openings would result in a decreased probability of fisher occupancy. … Harvest and mechanical hand treatments will also create fragmentation and loss of connectivity between some suitable habitat stands in the project. Post-harvest fuels reduction would remove downed wood and potentially remaining snags, further reducing suitability for fishers.
>
> The concentration, amount, and type of vegetative treatment would create a large landscape area of greater than 10% openings with a reduction in complex mature forest. Sauder and Rachlow (2014) found that an increase in the amount of open area from 5% to 10% reduces the relative probability of occupation by fishers by 39%. It is possible fishers will abandon this area or these territories until the converted habitat returns. Fishers in the harvested areas would be expected to displace to areas with suitable habitat. The timeframe for the converted habitat to return to a state utilized by fishers is not known with certainty and would depend on multiple natural and human factors but would likely involve multiple decades. The timeframe for the converted habitat to areas mature and develop denning and resting suitable habitat may be 80 to 100 years. …Although access management within the project area will not change, some areas will be more easily accessed making them more appealing to some forest users.

Still the FS downplays such impacts, relying upon an outdated and scientifically invalid assessment to claim viability is still assured: "However, critical habitat viability threshold would remain met and sufficient fisher habitat would remain on the overall landscape to sustain the Forest fisher population. …Despite the potential effects of the Dead Laundry project on suitable fisher habitat and the cumulative effects of the adjacent vegetative treatments, the critical habitat viability threshold would remain met far above Samson (2006a) estimate of approximately 74,378 acres of habitat is required to maintain minimum viable population of marten on the Forest."

This also exemplifies the FS's unwillingness to respond to public concerns timely expressed during the NEPA process. Our EA comments provided detailed critiques of the EA's reliance on Samson assessments. In their responses to comments—nothing is written regarding those specific criticisms. The FS ignores what it cannot refute.

CANADA LYNX

The EA fails to analyze the direct, indirect, and cumulative effects of the state of Idaho's new trapping laws on Canada lynx. This is also true of the FS's analyses for grizzly bears, wolverine, fisher, and marten. We incorporate our Complaint and Memorandum In Support Of Motion For Temporary Restraining Order And Preliminary Injunction in Case No. 2:21-cv-00479-DCN, and include them on a data disk submitted as part of this Objection.

WOLVERINE

BLACK-BACKED WOODPECKER

PILEATED WOODPECKER

NORTHERN GOSHAWK

PINE MARTEN

VIABILITY

INSUFFICIENT ANALYSIS OF EFFECTS ON AQUATIC SPECIES, RIPARIAN AREAS, AND WATER QUALITY

As discussed above under ACCESS AND TRAVEL MANAGEMENT, the FS fails to analyze and disclose the full and accurate condition of system and nonsystem roads, which results in an inaccurate baseline for ESA consultation purposes. Also, the fisheries Biological Assessment (BA) itself presents an inaccurate description of both the existing conditions of roads and of roads to be constructed. For example: "Stream crossings and culvert replacements will also not be analyzed in detail but will be mentioned in this report." The BA also discloses that the FS apparently has no idea how many culverts need replacing: "During project implementation while road reconstruction and reconditioning are being conducted, there could be culverts identified as needing replacement."

The EA states**:**

> For this proposed project, activities within the stream channel that have the potential for direct injury to individual fish include excavation of or for culverts and other stream crossings on road prisms.
>
> … Culverts (especially undersized culverts) can fail during high flow events, resulting in the rapid erosion of large amounts of road fill and surface into both fishbearing and non-fishbearing stream channels.

The draft DN cannot reasonably arrive at a conclusion of no significant impacts, since the impacts have not even been quantified in the EA, BA, or specialists reports. The FS fails to take the hard look NEPA requires.

The EA states, "The proposed road activities …results in a total of 46.7 miles of roads within the RHCAs in the project area upon completion of project activities." This statement also appears in the BA and Fisheries Report. However the latter (but not the EA) also states, "There are ~91 miles of gravel or native surface (dirt) roads within RHCAs." The Watershed Resource report's Figure 1 (USGS HUC12 subwatersheds in the Dead Laundry project) implies that the 91 miles includes portions outside the "project area."

The BA states, "Road density is sometimes used as a surrogate for impacts to streams and watersheds and is related to reduced fisheries composition and persistence at higher densities. Desired conditions for RHCA road density based on the NOAA Matrix of Pathways and Indicators (NOAA, 1998) are less than 1 mi/mi^2." NOAA, 1998 is "Matrix of Pathways and Indicators of Watershed Condition for Chinook, Steelhead and Bull Trout. Local Adaptation for the Clearwater Basin and Lower Salmon." That document explains it is "Local adaptation of Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale, National Marine Fisheries Service, Environmental and Technical Services Division, Habitat Conservation Branch, August 1996. Local adaptation and use by Cottonwood BLM, Clearwater NF, and Nez Perce NF, November 1997, through the level 1 streamlining process."

So what the BA refers to as "desired conditions" for RHCA road density is found in the column of "high habitat conditions" shown in NOAA, 1998. The BA doesn't say why the FS only chose a single "indicator" out of the entire set of habitat indicators in NOAA, 1998 and why the other indicators were omitted from analysis. Others include: Watershed Road Density, Landslide Prone Road Density, Riparian Vegetation Condition, Change in Peak/Base Flow, Water Yield (ECA), Sediment Yield, Width/Depth Ratio, Streambank Stability, Floodplain Connectivity, Temperature, Suspended Sediment, Chemical Contamination/Nutrients, Physical Barriers-Adult, Physical Barriers-Juvenile, Cobble Embeddedness, Percent Surface Fines, Percent Fines By Depth, Large Woody Debris, Pool Frequency, Pool Quality, Off-Channel Habitat, Habitat Refugia, Harassment, Redd Disturbance, Juvenile Harvest, Subpopulation Size, Growth and Survival, Life History Diversity and Isolation, and Persistence and Genetic Integrity.

The EA and BA do not utilize the indicator "Landslide Prone Road Density" to analyze project area watershed risks and current conditions. Again, it is one of those indicators from NOAA, 1998. The 1996 Beaver-Cedar Land Exchange FEIS evaluated erosion metrics in the Cedars Area, and one was Mass Wasting Potential ("the relative potential for mass soil movement caused by gravitational forces. Activities such as timber harvest, road construction, and fire have the potential to accelerate mass movement.") Cedar Land Exchange FEIS Table 3.1 is displayed below.

Table 3.1 - Mass Wasting Potential

	Beaver Block (%)	Cedars Area (%)
Low	68.5%	27.8%
Moderate	24.5%	43.8%
High	6.0%	24.4%
Very High	0.3%	3.9%
Talus/Rock	0.8%	0.2%

The simple table above is not sufficient for analyzing the NOAA, 1988 metric of Landslide Prone Road Density. Yet it is more landslide risk analysis than appears in the entire EA, BA, or Water Resource Report. The Beaver-Cedar Land Exchange FEIS recognized, "Major erosion events within the Cedars Area may have significant changes to fish habitat and populations

dependent upon the location of the impacts." Yet now the FS ignores such risks in their Dead Laundry analyses.

The Middle-Black FEIS included maps[5] "…with 1995 -1996 Landslide Locations and High Mass Wasting and Debris Avalanche Potential Areas", "Landtype Associations", and "Watersheds - Hydrological Units Level 5, 6, 7, 8 with 1995 -1996 Landslide Locations." The FS can do this but now refuses.

We include the document "Road Closure Changes on the North Fork Ranger District 2021" in our submissions as part of this objection. It documents road repairs due to landslides.

The Water Resource Report states: "GRAIPLite modeling … does not consider sediment produced from land management, or sediment produced from landslides." Also, "Disturbed WEPP … does not consider road-related sediment, sediment produced from land management, or sediment produced from landslides." Id.

The Water Resources report adds the NOAA, 1988 metrics of overall watershed road density and Equivalent Clearcut Area (ECA) omitted by the BA, yet it still ignores most of the metrics.

Furthermore, since the FS has obviously not included the legacy roads from DAW management days in its road density analyses, the values presented in the EA and resource reports are gross underestimates. (See the Osier Ridge and Moose Mountain topographic maps.)

The BA states: "All management activities must be designed to have no adverse effect to the designated Riparian Management Objectives (RMOs) which are large instream woody material, stream temperature, width to depth ratios, bank stability, and pool frequency." Yet instead of presenting data on conditions and trends of project area RMOs, the BA instead states:

> Preliminary monitoring results from the PACFISH/INFISH Biological Opinion (PIBO) monitoring across the Upper Columbia River Basin overall indicate an improving trend in residual pool depth, wood frequency, bank stability, and undercut banks at managed and unmanaged sites between 2001 and 2012 (USDA, 2012).

That cite is about ten years old; and given its extremely large geographic focus, cannot reasonably be expected to reflect project area RMO trends and conditions—especially in a project area with very high residual road densities from DAW timber management prior to the land exchange.

The Water Resources Report states, "New road construction would cross one small, headwater streams." As we've pointed out under ACCESS AND TRAVEL MANAGEMENT, this statement is false and misleading.

[5] We've included the Middle-Black FEIS documents, maps and ROD on a data disk submitted as part of this objection.

Our comments on the EA raise the issue of cobble embeddedness data in relation to forest plan consistency. But as far as we can tell, the FS chose to ignore our comment entirely, and so the FS hasn't disclosed anything further in regards to this critical direction in the CNF forest plan.

The FS's analyses have improperly excluded or minimized sediment generated by motorized trails. One of the FS's analytical assumptions in its use of the GRAIP Lite model (Water Resource Report) is that all routes listed as ATV (OHV) trails in the travel Plan, all new construction routes, and all Maintenance Level 1 routes are assumed to be placed into storage after project implementation. The exclusion of trails from the FS's sediment models is important because there are many miles of motorized trails in the project area. Some of these trails are open to ATVs and motorcycles only, but some of them are also open to highway legal vehicles. By not including trails in the sediment modeling, the FS underestimates the amount of sediment generated. This is important because there is a need to reduce erosion and sediment in the project area in order to meet Forest Plan direction for water quality and aquatic habitat and comply with the Clean Water Act.

The Idaho Department of Environmental Quality has approved a Total Maximum Daily Load (TMDL) for Deception Gulch, which mandates a reduction in sediment. From Idaho Department of Environmental Quality, 2003:

> The real concern for Deception Gulch comes from the sediment source data and information which indicate the sediment loading poses a real threat to water quality. Road density in Deception Gulch is about twice of what the [Clearwater National Forest] considers acceptable for water quality. Of these roads, some 50 percent are on high-risk landtypes, which is a very high percentage. The result is that Deception Gulch has a very high mass failure rate, and most of the mass failures are associated with the roads…The real threat in terms of sediment loading is sediment from the mass failures, most of which have occurred in the past during rain-on-snow events.
>
> All of this together indicates that the sediment problems in Deception Gulch are of a nature and magnitude that reductions in event-based loading should and can be reduced. Analysis of the roads and geology of the watershed indicates that mass failures will continue to occur and degrade the stream. The road system on the west side of the drainage is built on geologic dip slopes that will continue to fail. Forest Service Road 734 shows numerous signs of fill slope slipping. Forest Service Roads 255 and 730 cross the contact between Wallace gneiss and the Revett quartzite where most of the large mass failures have occurred. It is likely that this unstable area will continue to fail...

This North Fork TMDL notes that about half of the ~42 miles of roads in Deception Gulch are located on high hazard landtypes. IDEQ recommends obliterating these roads to achieve the sediment load reduction target for Deception Gulch, which has not yet been achieved but could be pursued in the Dead Laundry Project.

The FS has not managed the Forest consistent with Forest Plan standard 8.j.: "Eliminate the watershed restoration backlog by 2000."

Foltz et al., 2009 is relied on by the FS to validate claims of minimal effects. It's not as clean as the FS represents. For example:

> Turbidity exceeded the regulatory limits during culvert removal at all locations monitored in this study and remained above the limits beyond the monitoring periods of 24 h at four of the locations. Sediment concentrations 100m downstream of the culvert outlet were reduced by an order of magnitude, but **did not change the turbidity values sufficiently to meet regulatory limits**. (Foltz et al., 2009; emphasis added.)

The EA fails to demonstrate timber sale consistency with the Forest Plan Standards found in Appendix K. The applicable Objectives (which are actually Forest Plan **Standards** according to the Forest Plan) are not being met. The EA fails to analyze and disclose cumulative impacts from all past management actions, consistent with NEPA's purpose for taking a "hard look."

Demonstrating that the FS is unaware of its own direction, the Water Resources Report shows the incorrect Water Quality Objective (standard) for Deception Gulch, reporting it as "Low Fishable" when in fact the Middle-Black Record of Decision included a forest plan amendment that raised it to "Moderate Fish":

Page K-9, List of Specific Stream Systems and Water Quality Criteria, Forest Plan

The following change (in bold) would be made to Deception Gulch:

Watershed (& critical reach)	Channel Type	Indicator Species Objective	Water Quality	Allowable Yrs in 30 Exceeding Threshold
Deception Gulch	B	Cutthroat Trout	**Moderate Fish**	**10**

Appendix B - 1

This amendment is also seen at the CNF forest plan webpage:
https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5400638.pdf

Reducing sediment is also a key strategy of the Bull trout Recovery Plan. The plan calls for the following actions, which include streams in the Dead Laundry Project Area:

> **Restore areas degraded by historical timber harvest**. Legacy impacts from timber harvest include lack of riparian trees and vegetation, high road densities, large areas of clearcuts, altered hydrologic regimes including increased peak flows, and other impacts that have created excessive fine sediment sources for watersheds. Potential restoration treatments include channel stabilization, riparian and upland plantings, placement of instream woody debris, etc. The following drainages have been degraded by historic timber harvest and have embedded and de-stabilized streams: Quartz, Cold Springs, Skull, Deception, Beaver, Isabella, and Moose Creeks within the North Fork Clearwater.
>
> **Compensate for legacy timber harvest and associated roading practices**. Continue to mitigate for the legacy of intensive timber harvest and poor silvicultural and road construction practices in steep and highly erosive canyon breaklands. Past practices and road systems have resulted in mass wasting events and continued erosion and sediment introduction into bull trout habitat. Actions including: replanting, obliterating roads, and improving road maintenance should be continued and new techniques implemented.

> Priority areas include…Lake, Moose, Osier, Quartz, Skull, Orogrande, Sheep Mountain, Beaver Block, Floodwood, and Breakfast Creek drainages in the North Fork Clearwater

Given the Forest Plan, the North Fork Clearwater TMDL, and the Bull Trout Recovery Plan, there is a clear case that the FS should be reducing the impacts of the road network in the project area—not increasing them. Permanently reducing the road network in areas listed in these documents and plans should have been a part of the project's purpose.

The BA's determination that the Dead Laundry timber sale is "Not likely to adversely affect" bull trout and bull trout critical habitat is arbitrary and capricious, and in violation of the Endangered Species Act. The FS hasn't even examined its roles and responsibilities under the Bull Trout Recovery Plan.

The Water Resources Report states, "Multiple studies demonstrate the ability of WEPP to accurately estimate runoff and sediment delivery from management activities and fire (Dun et al., 2009; Elliot, 2004; Laflen, Flanagan, & Engel, 2004)." The FS doesn't analyze and disclose the amount of error inherent with the WEPP model. The significance of such omissions is discussed in our objections in the SCIENTIFIC INTEGRITY section. Error is disclosed in another FS hydrologist report, the North Fork Mill Creek A to Z Hydrologist report (USDA Forest Service, 2015c):

> The documentation for the WEPP:Road model indicates that sediment delivery estimates are within +/- 50% of predicted values (Elliott et al. 1999). As a result, and like for the WEPP:FuME estimates, model-predicted sediment delivery values are best used to compare relative differences between alternatives and modeling scenarios. Error estimates for the average annual sediment load are not provided by the WFPB watershed analysis manual (WFPB 2011).

Elliot et al. 1999 is cited in the Dead Laundry Water Resource Report. The FS assumes a level of precision in the model that simply does not exist. This violates NEPA.

Nothing in the Water Resources Report analysis actually refers to sediment going into any particular stream, from any particular source. The analysis it too vague to make any conclusions on what sediment increases might or might not be "measurable" to demonstrate forest plan compliance.

The EA doesn't disclose the existing conditions of site-specific stream reaches and project effects on water quality, fish and other aquatic resources. The EA doesn't disclose information regarding the existence and effects of bedload and accumulated sediment. The EA doesn't analyze and disclose channel stability for specific stream reaches. The EA doesn't disclose the amount of existing accumulated fine and bedload sediment that remains from the previous logging and road construction.

The FS doesn't take a hard look at the condition of all streams and water bodies in the affected watersheds, and explain how those conditions contribute to fish population and trends. The FS

doesn't disclose populations of fish species in the project area, and compare those numbers to minimum viable populations. The Beaver-Cedar Land Exchange FEIS included this section:

> In 1990, Lake Creek and portions of two tributaries, Goose Creek and Shell Creek, were surveyed; data indicated that westslope cutthroat trout populations were lower than other streams and no bull trout were observed in the surveyed reaches. Although no bull trout were observed during the survey, the Lake Creek drainage is considered a potential bull trout refuge. Depressed westslope cutthroat trout populations in the lower drainage may be a result of habitat conditions below desired conditions for the high fish standard in the Forest Plan. Survey information does indicate strong westslope cutthroat trout populations within Goose Creek. Strong cutthroat populations are also expected in the upper Lake Creek drainage near Fish Lake, which supports a strong adfluvial stock of westslope cutthroat trout. Fish Lake supports a population of adfluvial cutthroat. There is little information about the habitat and requirements of this stock on the district. Adfluvial fish are affected by fishing pressure and habitat quality, and their populations may be reduced from historic conditions.

Perry & Jones (2016) looked at decades of hydrologic data from paired watersheds in the Western Cascades and found:

> ABSTRACT: Analysis of 60-year records of daily streamflow from eight paired-basin experiments in the Pacific Northwest of the United States (Oregon) revealed that the conversion of old-growth forest to Douglas-fir plantations had a major effect on summer streamflow. Average daily streamflow in summer (July through September) in basins with 34- to 43-year-old plantations of Douglas-fir was 50% lower than streamflow from reference basins with 150- to 500-year-old forests dominated by Douglas-fir, western hemlock, and other conifers. …. Young Douglas-fir trees, which have higher sapwood area, higher sapflow per unit of sapwood area, higher concentration of leaf area in the upper canopy, and less ability to limit transpiration, appear to have higher rates of evapotranspiration than old trees of conifer species, especially during dry summers. Reduced summer streamflow in headwater basins with forest plantations may limit aquatic habitat and exacerbate stream warming, and it may also alter water yield and timing in much larger basins. Legacies of past forest management or extensive natural disturbances may be confounded with effects of climate change on streamflow in large river basins. ...
>
> Discussion - This study showed that, relative to mature and old-growth forest dominated by Douglas-fir and western hemlock or mixed conifers, forest plantations of native Douglas-fir produced summer streamflow deficits within 15 years of plantation establishment, and these deficits have persisted and intensified in 50-year-old forest stands . … This finding has profound implications for understanding of the effects of land cover change, climate change, and forest management on water yield and timing in forest landscapes. The size of canopy opening explained the magnitude and duration of initial summer streamflow surpluses and subsequent streamflow deficits, consistent with work on soil moisture dynamics of canopy gaps. … Together, the paired basin and experimental gap results indicate that even-aged plantations in 8 ha or larger clearcuts are likely to develop summer streamflow deficits, and these deficits are unlikely to be substantially mitigated by dispersed thinning or small gap creation. Relatively high rates of summer evapotranspiration by young (25 to 45 years old) Douglas-fir plantations relative to mature and old-growth forests apparently caused reduced summer streamflow in treated basins. Young Douglas-fir trees (in AND 1) had higher sapflow per unit sapwood area and greater sapwood area compared to old Douglas-fir trees (in AND 2; Moore, Bond, Jones, Phillips,

& Meinzer, 2004). In summer, young Douglas-fir trees have higher rates of transpiration (sapflow) compared to old Douglas-fir trees, because their fast growth requires high sapwood area and because their needles appear to exercise less stomatal control when vapor pressure deficits are high. Leaf area is concentrated in a relatively narrow height range in the forest canopy of a forest plantation, whereas leaf area is distributed over a wide range of heights in a mature or old-growth conifer forest. In summer, these factors appear to contribute to higher daily transpiration rates by young conifers relative to mature or older conifers, producing pronounced reductions in streamflow during the afternoons of hot dry days (Bond et al., 2002). At sunset, transpiration ceases, and streamflow recovers. Hence, daily transpiration produces large diel variations in streamflow in AND 1 (plantation) relative to AND 2 (reference). … Reduced summer streamflow has potentially significant effects on aquatic ecosystems. Summer streamflow deficits in headwater basins may be particularly detrimental to anadromous fish, including steelhead and salmon, by limiting habitat, exacerbating stream temperature warming, and potentially causing large-scale die-offs … Reductions in summer streamflow in headwater basins with forest plantations may affect water yield in much larger basins. Much of the Pacific Northwest forest has experienced conversion of mature and old-growth forests to Douglas-fir plantations over the past century. Climate warming and associated loss of snowpack is expected to reduce summer streamflow in the region (e.g., Littell et al., 2010). Declining summer streamflows in the Columbia River basin may be attributed to climate change (Chang, Jung, Steele, & Gannett, 2012; Chang et al., 2013; Hatcher & Jones, 2013), but these declines may also be the result of cumulative forest change due to plantation establishment, … Despite summer streamflow deficits, young forest plantations in the Andrews Forest yield more water in winter, contributing to increased flooding (Harr & McCorison, 1979; Jones & Grant, 1996; Beschta, Pyles, Skaugset, & Surfleet, 2000; Jones, 2000; Jones & Perkins, 2010).

Conclusions … Long-term paired-basin studies extending over six decades revealed that the conversion of mature and old-growth conifer forests to plantations of native Douglas-fir produced persistent summer streamflow deficits of 50% relative to reference basins, in plantations aged 25 to 45 years. This result challenges the widespread assumption of rapid "hydrologic recovery" following forest disturbance …

The FS does not consider the fact that roads increase the efficiency of water transport during storm or snowmelt events, elevating water yields well above natural, with damaging effects. The EA ignores water yield and peak flows as factors. FS hydrologist Johnson, 1995 discusses many forms of road-related and other cumulative impacts the EA fails to consider.

The IPNF's Camp Robin timber sale Hydrology Report (USDA Forest Service, 2018c) explains why this is important: "Runoff from rain falling on snow has been associated with increased risk of damage to stream banks and flooding. Available data indicates that rain falling on snow in open areas produces more water available for runoff than rain falling in forested areas. Much of the project area (~80%) falls in the rain-on-snow zone based on elevation (between 3500' and 4500')."

Lacking any analysis of trends or measures for RMOs for bank stability, width to depth ratio, instream large woody debris, and pool frequency we can only surmise that RMOs are not being met. But there's no analysis that discusses current conditions in relation to RMOs. Apparently it's the FS's position that never achieving RMOs is okay.

The EA fails to present a sufficient analysis to determine if RMOs would be retarded by project and cumulative impacts. The EA fails to conduct a proper analysis of water flow alteration effects on stream bank erosion and channel scouring during spring runoff and/or rain-on-snow (ROS) events. Most segment altering and channel forming events occur during instantaneous flows.

Openings accumulate much more snow than in a forested areas that are not as "open," thus provide a significant contribution to water yield especially during ROS and spring runoff events. The number, mileage and proximity of the roads to the proposed logging units and streams are important because they will also have a significant effect on peak flows and the resultant impact on fish, steam channels and possible flooding.

SOIL

The FS fails to consider the role of mycorrhizal fungi in maintaining ecological integrity. Mycorrhizal networks play important roles in mitigating the impacts of climate disruption to forest ecosystems. They facilitate regeneration of migrant species that are better adapted to warmer climates and primed for resistance against insect attacks. (Song et al. 2015.) To achieve these benefits all of the parts and processes of highly interconnected forest ecosystems must be preserved and protected.

Mycorrhizal fungi distribute photosynthetic carbon by connecting the roots of the same or different tree species in a network allowing each to acquire and share resources. Large mature trees become the hubs of the network and younger trees the satellite nodes.

Mycorrhizal networks transmit water, carbon, macronutrients, micronutrients, biochemical signals and allelochemicals from one tree to another, usually from a sufficient tree to a tree in need. This type of source-sink transfer has been associated with improved survivorship, growth and health of the needy recipient trees in the network.

Recognition of kin is also evident between established large hub trees and their seedlings and saplings. Hub trees shuttle their kin more micro-elements and support more robust mycorrhizal networks providing them with a competitive advantage. However, hub trees also share resources with strangers, suggesting these evolutionary mechanisms exist not just for individual species but also at the community level.

Injury to a tree from defoliation by an insect herbivore or by physically removing foliage results in the transmission of defense signals through the connecting mycorrhizal mycelium to neighboring trees. These neighbors respond with increased defense-gene expression and defense-enzyme activity, resulting in increased pest resistance.

In Douglas-fir, sudden injury to a hub tree not only increases defense enzymes of healthy neighbors but elicits a rapid transfer of photosynthate carbon to a healthy neighbor. This suggests that the exchange of biochemicals between trees elicits meaningful changes in the senders' and receivers' behavior that enables the community to achieve greater stability in the face of a changing climate. (Song et al. 2015.)

The complete omission of any consideration of mycorrhizal networks is a symptom of a single minded vision of the future that is inconsistent with the unpredictability of climate-driven change. Instead, forest managers should use scenario building models to explore an envelope of probable futures that becomes wider the further forward one projects. (Lempert, 2002.) In this more multifaceted approach based on complex systems science, managers quantify the likelihood of each scenario and then address the ranges of uncertainties in the ecological, social, and economic dimensions. (Filotas, et al., 2014).

While much of the science demonstrating the importance of mycorrhizal networks is recent, the concepts are not new. For example, the FS's own scientists (Harvey et al., 1994) invoked the relationship between chemical properties and biological properties: "Productivity of forest and rangeland soils is based on a combination of diverse physical, chemical and biological properties." Harvey et al., 1994 further expands on this (emphases added):

> **The Soil as a Biological Entity**
> Traditionally, some have viewed soil as inert and inanimate, and soil properties have often been perceived as distinctive but relatively unchanging—except for plant nutrients—and based on mineral constituents. The organic horizons have, until recently, been largely ignored. Soil microbes have also been ignored, except for a few high-profile organisms (such as soil-borne pathogens and mycorrhizal fungi). Predictions by forest growth models have keyed almost exclusively on vegetation, gross land form, and site characteristics—the aboveground characteristics of the last rotation were assumed to be the best indicator for predicting growth, ignoring soil and related soil-borne processes. If soil potential was reduced, the assumption was that fertilizing could offset any damage. This approach has fostered a significantly overoptimistic view of the health and productivity potential for second generation forests (Gast and others 1991, Powers 1991).
>
> Contemporary studies indicate that **soil quite literally resembles a complex living entity**, living and breathing through **a complex mix of interacting organisms-from viruses and bacteria, fungi, nematodes, and arthropods to groundhogs and badgers**. **In concert, these organisms are responsible for developing the most critical properties that underlie basic soil fertility, health, and productivity** (Amaranthus and others 1989, Harvey and others 1987, Jurgensen and others 1990, Molina and Amaranthus 1991, Perry and others 1987). **Biologically driven properties resulting from such complex interactions require time lines from a few to several hundreds of years to develop, and no quick fixes are available if extensive damages occur (Harvey and others 1987)**.
>
> **Microbial Ecology**
> **The variety of organisms residing in forest soils are extensive; all contribute to soil development and function, some in very critical ways** (Amaranthus and others 1989).

> Although this section concentrates on the microbes (primarily bacteria and fungi), we recognized that **several orders of insects, earthworms, and burrowing mammals make significant and sometimes critical contributions to organic matter decomposition, soil mixing, and microbe propagule movement within many forest soils** (Molina and Amaranthus 1991, Wilson 1987).
>
> The numbers and biomass of microbes in forest soil can be staggering; for example 10 to 100 million bacteria and actinomycetes, 1000 to 100,000 fungal propagules, and several kilometers of hyphae (fungal strands) can be present in a single gram of soil (Bollen 1974). The biomass related to such numbers is also staggering. Old-growth Douglas-fir forests of the Pacific Northwest can contain 4200 kg/ha dry weight of fungal hyphae and 5400 kg/ha of ectomycorrhizal root tips alone (Fogel and others 1973). Bacterial biomass could equal or exceed fungal biomass, and **the total biomass of an inland cedar/hemlock forest should be very nearly comparable to a coastal Douglas-fir forest. Thus, microbial biomass in eastside forests could easily reach 10,000 kg/ha and are a force to consider in management methods.**
>
> …The ...descriptions of microbial structures and processes suggest that they are likely to provide highly critical conduits for the input and movement of materials within soil and between the soil and the plant. Nitrogen and carbon have been mentioned and are probably the most important. Although the movement and cycling of many others are mediated by microbes, sulfur phosphorus, and iron compounds are important examples.
>
> The relation between forest soil microbes and N[6] is striking. Virtually all N in eastside forest ecosystems is biologically fixed by microbes... Most forests, particularly in the inland West, are likely to be limited at some time during their development by supplies of plant-available N. Thus, to manage forest growth, we must manage the microbes that add most of the N and that make N available for subsequent plant uptake. (Internal citations omitted.)

Over 25 years ago, Harvey et al., 1994 asked the following question: "Can individuals (or groups) parasitize one another, that is to say, move nutrients or photosynthate around within a stand to balance temporary shortfalls? Such movement has yet to be widely demonstrated, except in simple microcosms (Read and others 1985), but it seems likely, particularly on highly variable sites that include harsh or infertile environments (ferry and others 1989)." More recent research answers that question with a resounding **yes**. (E.g. Simard et al., 2015; Gorzelak et al., 2015).

In regards to the profound **biological properties** of forest soil, Simard et al., 2015 conclude from their research on relationships between fungi and plants (how nutrient transfers are facilitated by fungal networks) state, "resource fluxes though ectomycorrhizal (EM) networks are sufficiently large in some cases to facilitate plant establishment and growth. Resource fluxes through EM networks may thus serve as a method for interactions and cross-scale feedbacks for development of communities, consistent with complex adaptive system theory." Simard et al., 2013 state, "Disrupting network links by reducing diversity of mycorrhizal fungi… can reduce tree seedling survivorship or growth (Simard et al, 1997a; Teste et al., 2009), ultimately affecting recruitment

[6] Nitrogen

of old-growth trees that provide habitat for cavity nesting birds and mammals and thus dispersed seed for future generations of trees." Also, Gorzelak et al., 2015:

> …found that the behavioural changes in ectomycorrhizal plants depend on environmental cues, the identity of the plant neighbour and the characteristics of the (mycorrhizal network). The hierarchical integration of this phenomenon with other biological networks at broader scales in forest ecosystems, and the consequences we have observed when it is interrupted, indicate that underground "tree talk" is a foundational process in the complex adaptive nature of forest ecosystems.

The relationships between soil fungi and plant nutrients should not be anything new to the FS. For example Amaranthus, Trappe, and Molina (in Perry, et al., 1989a) recognized "mycorrhizal fungus populations may serve as indicators of the health and vigor of other associated beneficial organisms. Mycorrhizae provide a biological substrate for other microbial processes."

Beiler et al., (2009) conclude the "mycorrhizal network architecture suggests an efficient and robust network, where large trees play a foundational role in facilitating conspecific regeneration and stabilizing the ecosystem."

In Simard et al., 2012, scientists focus:

> …on four themes in the recent literature: (1) the physical, physiological and molecular evidence for the existence of mycorrhizal networks, as well as the genetic characteristics and topology of networks in natural ecosystems; (2) the types, amounts and mechanisms of interplant material transfer (including carbon, nutrients, water, defence signals and allelochemicals) in autotrophic, mycoheterotrophic or partial mycoheterotrophic plants, with particular focus on carbon transfer; (3) the influence of mycorrhizal networks on plant establishment, survival and growth, and the implications for community diversity or stability in response to environmental stress; and (4) insights into emerging methods for modelling the spatial configuration and temporal dynamics of mycorrhizal networks, including the inclusion of mycorrhizal networks in conceptual models of complex adaptive systems. **We suggest that mycorrhizal networks are fundamental agents of complex adaptive systems (ecosystems) because they provide avenues for feedbacks and cross-scale interactions that lead to self-organization and emergent properties in ecosystems.** (Emphasis added.)

The dynamics of this mycorrhizal network extends well beyond an exchange of nutrients, into the essential nature and functioning of the ecosystem itself. The news blog Return to Now published an interview with ecologist Suzanne Simard ("Trees Talk to Each Other in a Language We Can Learn, Ecologist Claims") based upon her research. The blog states:

> What she discovered was a vast tangled web of hair-like mushroom roots — an information super highway allowing trees to communicate important messages to other members of their species and related species, such that the forest behaves as "a single organism." …(Trees) communicate by sending mysterious chemical and hormonal signals to each other via the mycelium, to determine which trees need more carbon, nitrogen, phosphorus

> and carbon, and which trees have some to spare, sending the elements back and forth to each other until the entire forest is balanced. "The web is so dense there can be hundreds of kilometers of mycelium under a single foot step," Simard says."

The science magazine Nautilus featured Simard in an article, "Never Underestimate the Intelligence of Trees." Simard states:

> I've come to think that root systems and the mycorrhizal networks that link those systems are designed like neural networks, and behave like neural networks, and a neural network is the seeding of intelligence in our brains. …All networks have links and nodes. In the example of a forest, trees are nodes and fungal linkages are links. Scale-free means that there are a few large nodes and a lot of smaller ones. And that is true in forests in many different ways: You've got a few large trees and then a lot of little trees. A few large patches of old-growth forest, and then more of these smaller patches. This kind of scale-free phenomenon happens across many scales.
>
> I made these discoveries about these networks below ground, how trees can be connected by these fungal networks and communicate. But if you go back to and listen to some of the early teachings of the Coast Salish and the indigenous people along the western coast of North America, they knew that already. It's in the writings and in the oral history. The idea of the mother tree has long been there. The fungal networks, the below-ground networks that keep the whole forest healthy and alive, that's also there. That these plants interact and communicate with each other, that's all there. They used to call the trees the tree people. The strawberries were the strawberry people. Western science shut that down for a while and now we're getting back to it. … I think this work on trees, on how they connect and communicate, people understand it right away. It's wired into us to understand this. And I don't think it's going to be hard for us to relearn it.

Also see this phenomenon documented in:

- the film "Intelligent Trees"
- the TED Talk "How trees talk to each other"
- the YouTube video "Mother Tree" embedded within the Suzanne Simard "Trees Communicate" webpage
- the Jennifer Frazer article in *The Artful Amoeba*: "Dying Trees Can Send Food to Neighbors of Different Species via Wood-Wide Web"
- the Ferris Jabr article: "The Social Life of Forests"
- the *New York Times* article: "The Woman Who Looked at a Forest and Saw a Community"

More scientific research results are in Simard et al. 1997, Simard et al. 1997a, Simard et al. 2009, Simard et al. 2012 & Simard et al. 2018.

What Dr. Simard and an expanding body of scientific research show is that we can no longer view forest ecosystems as a collection of competing entities vying for limited resources, but rather as a cooperative—a community—that exhibits what may be called "Forest Wisdom," with the following core elements:

- Cooperation and Connection: Forests are complex adaptive systems that cooperate and care for trees and other life forms by creating favorable conditions, resisting stress and fostering long life. Sharing for the greater good gives cooperating networks evolutionary advantages over competing individuals.
- Mother Trees: Trees communicate through vast underground fungal networks of hubs and links, sharing nutrients and water, resisting insects and disease and nourishing their progeny until they reach the light. Mother Trees (a term coined by Dr. Simard), the most linked hub in this network, recognize and care for their young.
- Mindless Mastery: Tree intelligence is decentralized and underground. Thousands of root tips gather and assess data from the environment and respond in coordinated ways that benefit the entire forest. Forests achieve a "mindless mastery" through cooperation allowing them to respond in optimal ways to environmental challenges.
- Nature's Phoenix: Forests arise renewed like the mythological phoenix from patches of high-intensity fire to create snag forests as diverse as old-growth. Forests also successfully regenerate in heterogeneous and ecologically beneficial ways following large high-intensity fires.

Understanding Forest Wisdom means changing our perception of how forests function and abandoning the FS's entire "healthy forests" framework. Our forests are not sick, they do not need any chainsaw medicine. In fact, forests are cooperative systems that are essential for helping mitigate global climate disruption and addressing the biodiversity crisis we currently face.

The FS fails to recognize and consider the role of shared mycorrhizal networks and disclose how project activities will affect their function. Researchers are seeking answers to such questions. Sterkenberg, et al. (2019) investigated the abundance and diversity of ectomycorrhizal (ECM) fungi following varying levels of logging, ranging from clearcutting to 100% retention (control treatment). They explain that ECM fungi "represent a large part of the biodiversity in boreal forests. They depend on carbohydrates from their host trees and are vital for forest production, as uptake of nutrients and water by the trees is mediated by the ECM symbiosis. ECM fungal mycelium forms a basis for soil food webs." The researchers conclude:

> Our results confirm the value of retaining trees in forest management as a measure to maintain ECM fungal biodiversity. There was a clear and positive relationship between the amount of retention trees and ECM fungal species richness as well as the relative abundance of ECM fungi in the total fungal community. Frequent ECM fungi are likely to withstand logging with at least 30% of the trees retained, but at reduced mycelial abundance in the soil. Although **clear-cutting cause ECM fungal communities to be strongly impoverished even with FSC requirements of tree retention met**, the most common species survive harvest. Higher levels of tree retention, that is, in continuous cover forestry, may counteract local extinctions also of less frequent species and thus support efforts to manage for sustained high ECM fungal diversity. **Several rare species, and species predominantly confined to old natural forests, appear to rarely re-establish after clear-cutting** and are hence red-listed. For the survival of these species, **protection of forests with high conservation values and forest management directed towards conservation needs are unequivocally needed**. (Emphases added.)

From “A powerful and underappreciated ally in the climate crisis? Fungi” by scientists Toby Kiers and Merlin Sheldrake:

> Globally, the total length of fungal mycelium in the top 10cm of soil is more than 450 quadrillion km: about half the width of our galaxy. These symbiotic networks comprise an ancient life-support system that easily qualifies as one of the wonders of the living world.
>
> Through fungal activity, carbon floods into the soil, where it supports intricate food webs – about 25% of all of the planet’s species live underground. Much of it remains in the soil, making underground ecosystems the stable store of 75% of all terrestrial carbon. But climate change strategies, conservation agendas and restoration efforts overlook fungi and focus overwhelmingly on aboveground ecosystems. This is a problem: the destruction of underground fungal networks accelerates both climate change and biodiversity loss and interrupts vital global nutrient cycles.
>
> Fungi lie at the base of the food webs that support much of life on Earth. About 500m years ago, fungi facilitated the movement of aquatic plants on to land, fungal mycelium serving as plant root systems for tens of millions of years until plants could evolve their own. This association transformed the planet and its atmosphere – the evolution of plant-fungal partnerships coincided with a 90% reduction in the level of atmospheric carbon dioxide. Today, most plants depend on mycorrhizal fungi – from the Greek words for fungus (mykes) and root (rhiza) – which weave themselves through roots, provide plants with crucial nutrients, defend them from disease and link them in shared networks sometimes referred to as the “woodwide web”. These fungi are a more fundamental part of planthood than leaves, wood, fruit, flowers or even roots.
>
> We are destroying the planet’s fungal networks at an alarming rate. Based on current trends, more than 90% of the Earth’s soil will be degraded by 2050. … Logging wreaks havoc below ground, decreasing the abundance of mycorrhizal fungi by as much as 95%, and the diversity of fungal communities by as much as 75%. A large study published in 2018 suggested that the “alarming deterioration” of the health of trees across Europe was caused by a disruption of their mycorrhizal relationships, brought about by nitrogen pollution from fossil fuel combustion and agricultural fertiliser.
>
> Mycorrhizal fungal networks make up between a third and a half of the living mass of soils and are a major global carbon sink.
>
> Mycorrhizal fungi are keystone organisms that support planetary biodiversity; when we disrupt them, we jeopardise the health and resilience of the organisms on which we depend. Fungal networks form a sticky living seam that holds soil together; remove the fungi, and the round washes away. Mycorrhizal networks increase the volume of water that the soil can absorb, reducing the quantity of nutrients leached out of the soil by rainfall by as much as 50%. They make plants less susceptible to drought and more resistant to salinity and heavy metals . They even boost the ability of plants to fight off attacks from pests by stimulating the production of defensive chemicals. The current focus on aboveground

> biodiversity neglects more than half of the most biodiverse underground ecosystems, because areas with the highest biodiversity aboveground are not always those with the highest soil biodiversity.

The FS fails to acknowledge the critical role mycorrhizal fungi networks play in sustaining forests, and provide protections for mycorrhizal networks in programmatic planning and project planning for roads, logging, prescribed burns, recreation and livestock grazing. This is necessary to meet the purposes of NEPA and the biodiversity mandates of NFMA.

Project inconsistency with Forest Plan and Region 1 Soil Quality Standards

The FS fails to demonstrate consistency with Forest Plan direction and the Region 1 Soil Quality Standards (R1 SQS). The EA and Soil Report don't accurately disclose current, foreseeable, and cumulative detrimental soil disturbance (DSD) within activity areas.

Table 2 of the Soil Report fails to take the "Existing % DSD", add it to the Direct/Indirect % DSD attributable to Dead Laundry logging and associated activities, to arrive at a total % DSD. This failure to disclose is misleading and results in false conclusions.

So for unit 42, adding Existing % DSD (4%) plus Direct/Indirect % DSD (15%) = 19%, which violates the Standards. But Table 2 doesn't do the math correctly. Instead, under column "Cumulative % DSD" a total of only 8% is displayed. There is no explanation for why 4+15 doesn't equal the conventional 19, and instead equals 8. Apparently the FS subtracts 11, but one cannot discern why. There is some suggestion in the Soil Report, where it says, "Soil decompaction activities as required by design features…" but that doesn't explain how the FS can reasonably attribute negative DSD in doing its math.

Also, the EA states, "Decommissioning temporary roads and skid trails from both past and present activities will occur under the action alternative. This includes decompacting, recontouring, and recovery of excavated and displaced topsoil, and is expected to initiate and facilitate the recovery of soil productivity." However, because the FS essentially is saying existing DSD is zero ("there is very little detrimental soil disturbance in the project area")—how can one recover from zero? The FS doesn't explain this self-contradiction.

Using correct grade school a + b = c mathematics, twenty of 104 logging units and one fuels unit in Table 2 would result in cumulative DSD exceeding the 15% Standard. But the Soil Report doesn't disclose that. It does say, "In the project record, Soil Appendix 1 Calculating DSD details the formulas and assumptions used to estimate the cumulative effects from project design feature implementation." But that document is not on the project website. Instead the Soil Report states, "None of the proposed units will exceed Regional Soil Quality Standards."

Furthermore, all old and existing road templates, such as those shown on the on 7.5 minute topo maps, must be included in DSD calculations. This is necessary, absent any bulk density (as per Forest Plan direction) measurements indicating compaction has recovered. However, since the Soil Report lacks sufficient detail, and because the FS has told us that they are not conducting a comprehensive inventory of nonsystem roads with this project (RE-Dead Laundry project

information-Boykin.pdf), we can assume this is a key detail being ignored in Dead Laundry analyses. Forest Plan soil standards are being brushed aside.

Flawed Soil Quality Standards

FS soil scientists Miller et al., 2010 critiqued the DSD methodology:

> Protecting the productive capacity of soil is a paramount goal of sustainable forest management. To support this goal, controlling or restricting forestry activities that could detrimentally reduce onsite productivity and quality of water for drinking or for aquatic habitat is critical. **Current science and knowledge, however, do not enable us to reliably predict which, where, and when specified forest activities cause "substantial and permanent impairment of the productivity of the land" (NFMA 1976).** Inadequate knowledge limits (1) reliability of prescriptions for activities, practices, and methods; (2) interpreting results of after-activity "effectiveness" monitoring, including severity and areal extent of soil disturbance; (3) developing cost-effective prescriptions for restorative or rehabilitative efforts; and (4) assessing the tradeoffs in risks to soil capacity between activities to reduce fuels and wildfire hazard compared to consequences of wildfire. (Emphasis added.)
>
> …Existing regional standards and guidelines for avoiding loss of soil quality focus on recognizing and classifying hazard of soil disturbance, and tacitly assume consequences to productivity based on general principles of soil science and **outdated and inconsistent empirical evidence**. (Emphasis added.)

Also (*Id.*):

> Simple walkthroughs can be criticized because they provide no protection against seriously biased estimates of soil damage within the activity area. Greater rigor and confidence can be obtained by applying a protocol that specifies how the activity area is to be assessed to ensure a probability-based sampling that avoids biased selection.
>
> …Although, making biological linkages with visual and quantitative changes in soils is difficult and time-consuming, such linkages are necessary to reduce uncertainty about the practical consequences of soil disturbance.
>
> In our opinion, (1) current regional soil-quality numerical standards and guidelines are too general to apply to all sites and situations; (2) current numerical standards and disturbance classes are generally poor predictors of subsequent consequences to tree growth after soil disturbance; (3) site-specific guidelines, preferably based on risk analysis, are needed to address interactions among soil, climate, and other site factors that strongly influence response of trees to soil disturbance; (4) similar risk analyses would be useful for other values potentially affected by soil disturbance.
>
> …Our current state of knowledge, however, does not allow us to make scientifically supportable generalizations about the effects of varying degrees of soil disturbance on tree growth.

> …In conclusion, new standards for judging "detrimental" compaction and other types of soil disturbance are needed. Concerted research will be required because response of trees and other vegetation to soil disturbances is conditioned by both macro- and micro-climate and silvicultural practices like thinning and vegetation control. We suspect that a given severity of soil disturbance will be more detrimental to plant growth at locations with harsh rather than moderate climatic stress. Solutions to the dilemma are clear. Based on current knowledge and professional experience, we acknowledge current uncertainties and complexity of biological variation and relationships and recommend more research to set realistic thresholds that are clearly and consistently detrimental to plant growth. Until further validation research has occurred, only classification or description of soil disturbance is justified. Conversely, general predictions about tree response based simply on such visual classes are not justified.

Essentially, Miller et al., 2010 admit that the FS is in the dark as far assessing, predicting, and monitoring changes in soil qualities in relation to its management activities. Over four decades after its enactment, the agency is unable to meet one of the core mandates of the National Forest Management Act.

VISUAL QUALITY

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