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Title:

Comments: Hello,

Attached please find a comment from WildEarth Guardians and Center for Biological Diversity on the Flathead National Forest's proposed Mid-Swan Project DEIS. The comment includes

Dear Supervisor Steele,

WildEarth Guardians and the Center for Biological Diversity respectfully submit these comments to the U.S. Forest Service concerning the agency's analysis in its Draft Environmental Impact Statement (DEIS) under the National Environmental Policy Act (NEPA) of the Mid- Swan Landscape Restoration and Wildland Urban Interface Project (Mid-Sawn) on the Swan Lake Ranger District of the Flathead National Forest. The project area covers 174,205 acres National Forest System land, will take approximately 15 years to complete and includes a variety of vegetation management activities meant "to restore and maintain terrestrial and aquatic biodiversity in light of a changing climate, and to reduce fire behavior in the WUI region and in areas that have influence on fire behavior within the WUI." DEIS Executive Summary at x.

The Forest Service is considering two action alternatives, B and C. The former proposes to commercially harvest 40,627 acres and non-commercially treat 77,772 acres of which 13,315 acres would receive mechanized treatments. DEIS Executive Summary at xiii. Vegetation treatments under Alt. B requires construction of 38.7 miles of new permanent system roads and 10.6 miles of temporary roads, in addition to 7.5 miles of new road construction for proposed aquatic habitat restoration actions. Id. Alternative C proposes less vegetation treatments compared to Alt. B covering a total of 55,478 acres that includes 18,591 acres of commercial harvest and 36,888 of non-commercial treatments, of which 8,242 requires mechanical treatments. Id. at xv. Alternative C proposes 7.5 miles of new road construction for aquatic habitat restoration actions. Id. Both action alternatives propose storm-proofing (storing or closing) 242.5 miles of existing road, decommissioning 44.1 miles, rehabilitating 240 road- stream crossings and removing 4 fish passage barriers. Id. at xii - xiii, Table 1. The project area contains several at-risk wildlife species including grizzly bear, Canada lynx, wolverine, cutthroat trout, and bull trout. DEIS at 2.

WildEarth Guardians is a nonprofit conservation organization with offices in Montana and five other states. We have more than 188,000 members and supporters across the United States and the world. Guardians' mission is to protect and restore wildlife, wild places, wild rivers, and the health of the American West. WildEarth Guardians has organizational interests in the proper and lawful management of the forest road system and its associated impacts on the Flathead National Forest's wildlife and wild places.

The Center for Biological Diversity is a non-profit environmental organization with over 1.7 million members and online activists who value wilderness, biodiversity, old growth forests, and the threatened and endangered species which occur on America's spectacular public lands and waters. Center members and supporters use and enjoy the Flathead National Forest for recreation, photography, nature study, and spiritual renewal.

Our comments cover the following:

I. Flawed statement of purpose and need.

II. Clarify that the Forest Service is applying the 1978 CEQ NEPA regulations.

III. Improper reliance on condition-based analysis.

IV. Fails to provide for informed decisionmaking and meaningful public comment.

V. The analysis improperly relies on unsupported assumptions and runs contrary to best science.

VI. Address opposing scientific viewpoints.

VII. Failure to adequately assess and disclose direct, indirect, and cumulative impacts, including detailed, site-specific information.

VIII. Consider a reasonable range of alternatives.

IX. Improper focus on vegetation management in the backcountry, despite the claimed purpose and need to address wildfire risk in the WUI.

X. Inconsistent with NFMA.

XI. Failure to demonstrate compliance with the ESA.

XII. Failure to demonstrate compliance with the CWA.

XIII. Failure to ensure compliance with the Roadless Rule and NEPA, and otherwise avoid unroaded areas.

In addition, we support and incorporate by reference as part of our Mid-Swan DEIS comments the December 19, 2018 letter from the Swan View Coalition (submitted on behalf of several organizations, including WildEarth Guardians) regarding the scope of this project. We also support and incorporate by reference the Swan View Coalition's Oct. 13, 2020 DEIS comments.

I. Flawed statement of purpose and need.

NEPA directs federal agencies to "briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action." 40 C.F.R. [sect] 1502.13. Here, the Forest Service states the purpose is to (1) restore and maintain the terrestrial and aquatic biodiversity in light of a changing climate, and (2) reduce fire behavior in the wildland-urban interface ("WUI") and in areas that have influence on fire behavior within the WUI. See DEIS at 5. This statement is flawed because it is based on unsupported assumptions (see *infra*), lacks adequate support for the claimed needs, and fails to address its duty to identify the minimum road system.

A. The Forest Service fails to adequately support claimed needs

The Forest Service explains "[t]he purpose of the Mid-Swan Project is two-fold: to restore and maintain terrestrial and aquatic biodiversity in light of a changing climate, and to reduce fire behavior in the WUI and in areas that have influence on fire behavior within the WUI." DEIS at

5. In support for the claimed need for actions under Alternatives B and C, the agency explains it relied on "a combination of high-resolution 3-dimensional aerial photo interpretation, ecological departure analyses, historical documentation, and other modeling and research." DEIS at 5. It also asserts that "[t]his project is not an attempt to 'turn back the clock' and recreate the Swan Valley of the late 1800s, but to recognize the fact that over the past 100 years, human induced influences have degraded the landscape's capacity to sustain and recover from natural disturbances." *Id.* Yet, the methods the agency utilized to identify vegetative treatments appear to rely on

departures from historic conditions based largely on aerial photographs. DEIS at 93, ("[t]he above data were used to detect departure from the natural range of variation derived from historical air photos for the entire ecological subregion (Hessburg et al. 1999c)." The Forest Service explains that:

Natural reference conditions were based on the range of variation found in 23 watersheds with similar environmental conditions. Future reference conditions were based on the range of variation of 14 watersheds with a slightly warmer and drier climate, which served as approximation for the projected future conditions in the project area by the middle of this century.

DEIS at 6.

It is unclear to what extent future reference conditions informed the action alternatives since the analysis fails to adequately disclose how changing climate conditions factored into the vegetative management proposals.

Setting aside for a moment that forests evolved over several thousand years and it is completely arbitrary to select a 100 years as a temporal scale for comparison or use old photos and timber inventories for reference conditions, 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 Forest Service cannot rely on them to define management actions, or reasonably expect the action alternatives will result in restoring ecological processes. DEIS at 27. As an aside, the Forest Service's characterization that Ponderosa pine/Douglas fir forest types experience frequent low severity fires ignores evidence that "[i]n the northern Rockies, historical documentation (e.g., [45-48,50,53,54]) of mixed-severity regimes has been summarized in regional reviews [16,65,66], and stand-age reconstructions of historical fire regimes indicate mixed-severity fire in ponderosa-pine/Douglas-fir forests [67-69]." Odion et al, 2014.

Given changing climate conditions, the Forest Service should have emphasized reference conditions based on current and future ranges of variability, and less on historic departures. Further, the agency needs to shift its management approach to incorporate the likelihood that no matter what vegetation treatments it implements, there are going to be future forest wildfire- triggered conversions to other vegetation types. As such, the Forest Service cannot rely on the success of resistance strategies, as Coop 2020 demonstrates:

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

Coop et al., 2020.

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,

C. 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; Luo and Chen 2015 ("Our results suggest that the

consequences of climate change on tree mortality are more profound than previously thought"); 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").

The need for such considerations and acknowledgments is essential given the agency's assertion that commercial timber harvest is a tool for ecological restoration. DEIS at 6. We disagree. Perpetuating a long-term management regime of logging and prescribed burning is hardly ecological restoration, and the Forest Service's efforts to mimic natural disturbance patterns fails to actually restore natural processes since treated areas will need continual active management. See, e.g., DEIS at 21, 30, 155. This is hardly restoring nature. In fact, it is the height of hubris to assume that active management can replace the role of natural disturbance, and the agency's attempts to do so is nothing more than faking nature.

Given the dubious and inadequately supported need for timber harvest, the so-called connected actions to utilize forest roads and construct new roads is also unsupported.

B. The Forest Service fails to incorporate the duty to identify the minimum road system (MRS)

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 of its travel rule, the Forest Service has a substantive duty to address its over-sized road system. See 36 C.F.R. [sect] 212.5.

Identifying a resilient future road system is one of the most important endeavors the Forest Service 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. After nearly 20 years since finalizing the subpart A rules, the Forest Service can no longer delay in addressing this duty.

Yet here, the Forest Service fails to incorporate this duty within the Mid-Swan project's purpose and need. DEIS at 5. The omission exemplifies the agency's failure to ensure the road system provides for the protection of Forest Service System lands, reflects long-term funding expectations and minimizes adverse impacts. See 36 C.F.R. [sect] 212.5(b). In response to scoping comments calling for compliance with subpart A, the Forest Service erroneously asserts the 2014 Travel Analysis identified the minimum road system. DEIS at 87. To be clear, the travel analysis process results in recommendations for the MRS, but it does not actually identify the MRS for the Flathead. Any final determination of the MRS must be analyzed through the NEPA process and included in a decision document. This determination should rely on the travel analysis, but is separate and distinct. See Memorandum from Leslie Weldon to Regional Foresters et al. on Travel Management, Implementation of 36 CFR, Part 212, Subpart A (Mar. 29, 2012), page 2 ("The next step in identification of the [minimum road system] is to use the travel analysis report to develop proposed actions to identify the [minimum road system] . . . at the scale of a 6th code subwatershed or larger.").

The Flathead's 2014 Travel Analysis Process took place outside of any NEPA process, and the Forest Service has yet to comply with subpart A forest-wide. Further, the agency asserts that 36 C.F.R. [sect] 212.5(b) "applies to the unit level of the NFS, not to individual projects." DEIS at 87. We wholeheartedly support a unit-level NEPA process that results in identification and implementation of a forest road system that properly complies with subpart A, yet it is erroneous for the Forest Service here to assert that such compliance is not applicable to individual projects, especially given past agency direction to the contrary. See 2012 Weldon Memo at 2 (directing forests to "analyze the proposed action and alternatives in terms of whether, per 36 CFR 212.5(b)(1), the resulting [road] system is needed").

Complying with subpart A is a win-win-win approach: (1) it's a win for the Forest Service's 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. See 66 Fed. Reg. 3206, 3208 (Jan. 12, 2001) (Administration of the Forest Development Transportation System; Prohibitions; Use of Motor Vehicles Off Forest Service Roads) ("The final road management policy will improve access by allowing the agency to focus its limited resources on the roads people need and use.").

II. Clarify that the Forest Service is applying the 1978 CEQ NEPA regulations.

The Council on Environmental Quality recently revised the regulations implementing NEPA. 85 Fed. Reg. 43,304 (July 16, 2020) (codified at 40 C.F.R. Part 1500). Here, the Forest Service does not clearly indicate which CEQ NEPA regulations it is applying to this analysis. Regardless, because the NEPA process for this project started before Sept. 14, 2020, the Forest Service should exercise its discretion to apply long-standing, pre-2020 NEPA regulations and policy. 40

C.F.R. [sect] 1506.13 (2020) (giving discretion to agencies regarding effective date for ongoing NEPA processes). The 1978 regulations codified early judicial opinions based on language of the statute, provided the basis for a substantial body of judicial precedent spanning over four decades, and have formed the foundation for more specific regulations and policies enacted by individual agencies to implement their particular missions. See 36 C.F.R. Part 220 (2008), Forest Service Manual 1950, and Forest Service Handbook 1909.15.

The 2020 CEQ revised rule upends virtually every aspect of NEPA and its longstanding practice, contradicts decades of court interpretations of NEPA's mandates, and undercuts the reliance placed on NEPA by the public, decision-makers, and project proponents. It does so by limiting the scope of actions to which NEPA applies, eviscerating the thorough environmental analysis that lies at the heart of the statute, reducing the ability of the public to participate in federal agency decision-making, and seeking to limit review of agency NEPA compliance. The legality of the final rule is being challenged in a number of federal lawsuits brought by organizations that rely on NEPA to protect their varied interests in human health and the environment. See *Alaska Community Action on Toxics v. CEQ*, No. 3:20-cv-05199 (N.D. Cal. July 19, 2020); see also *Wild Virginia v. CEQ*, No. 3:20-cv-00045-NKM (W.D. Va. July 29, 2020); *Environmental Justice Health Alliance v. CEQ*, No. 1:20-cv-06143 (S.D.N.Y. Aug. 6, 2020).

Given the highly uncertain fate of the 2020 rule - with pending legal challenges and a potential change in administrations - the Forest Service would be wise not to jeopardize or delay ongoing decision-making processes by injecting additional and unnecessary uncertainty. In short, continuing to apply the 1978 regulations is the path to certainty, given the agency's clear discretion to do so with respect to this process, which was initiated before September 14, 2020.

III. Improper reliance on condition-based analysis.

NEPA regulations require federal agencies to

insure 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. [sect] 1500.1(b).

In March of 2020, the U.S. District Court for the District of Alaska rejected a similar attempt by the Forest Service to use a broad, vague EIS to approve logging 42,000 acres across a project area of 1.8 million acres on the Tongass National Forest. *Southeast Alaska Conservation Council, et al. v. U.S. Forest Service*, 443 F.Supp.3d 995 (D. Alaska 2020). The 2019 Prince of Wales Landscape Level Analysis Project would have authorized various management activities for 15 years, without defining cutting units or road alignments. *Id.* at 1000. Relying on binding precedent from *City of Tenakee Springs v. Block*, 778 F.2d 1402 (9th Cir. 1985), the District Court concluded "NEPA requires that environmental analysis be specific enough to ensure informed decision-making and meaningful public participation," and the "EIS's omission of the actual location of proposed timber harvest and road construction within the Project Area falls short of that mandate." *Id.* at 1009.

Here, the timing, nature, scope, and lack of detailed information make this project inappropriate for a project-level NEPA analysis and decision. Specifically, the Forest Service explains "alternatives B and C propose a range of vegetation and aquatic restoration treatments over a 15- year implementation period. EIS at 41. Yet, the "implementation guide (appendix A) would help facilitate the selection of an appropriate prescription and tools from a predefined suite of options." EIS at 47. This toolbox approach defers identification of specific actions until after the final project decision through use of the Implementation Guide on Restoration (IGOR). DEIS Appendix A at A-1. The agency explains that "[d]uring the first step, the Swan Lake District Ranger assembles an interdisciplinary team, reviews the estimated implementation schedule, and identifies a geographic area within an implementation unit to carry out actions authorized in the Record of Decision." *Id.* at A-3. The IGOR directs that during the "refinement" stage, forest officials will validate field conditions, and "specific units would be drawn and general prescriptions from the LOC flexible toolbox would be selected." *Id.*

In other words, the actual on-the-ground activities will not be disclosed until after the forest supervisor issues a final NEPA decision. The Forest Service explains there will be public involvement opportunities as specified in the IGOR, but these would be outside the NEPA process and therefore agency actions would not be subject to objections. This toolbox approach represents condition-based analysis that poses a number of serious concerns and violates NEPA. The Forest Service defines "condition based" as "[a] proposed activity is implemented on a conditional basis, based upon clearly identified on-the-ground conditions." *Id.* at A-64. Further, the agency explains that IGOR "is an extension of alternatives B and C and details the design criteria, best management practices, and thresholds to mitigate effects of the proposed actions. In addition, it includes decision guides, checklists, and other processes the implementation team would use post-decision to guide implementation." DEIS Executive Summary at xi. Yet, the agency must disclose this information during the NEPA process to provide meaningful public involvement opportunities.

The District Court for the District of Alaska recently rejected the Forest Service's attempt to rely on a broad, vague EIS to approve logging and road building across a vast landscape over the course of more than a decade. See *Southeast Alaska Conservation Council*, 443 F.Supp.3d 995. There, the court underscored the Forest Service's legal duty under NEPA to disclose when, where, and how logging projects will be implemented before approving project-level actions. *Id.* at 1009 (stating that "[t]he Project EIS's omission of the actual location of proposed timber harvest and road construction within the Project Area falls short" of NEPA's mandate "that environmental analysis be specific enough to ensure informed decisionmaking and meaningful public participation").

This Mid-Swan Project is very similar to the Prince of Wales Landscape Level Analysis that was proposed for the Tongass National Forest, and suffers from the same legal flaws under NEPA. The Prince of Wales Project EIS "provide[d] that 'site-specific locations and methods' for activities such as timber harvest 'w[ould] be determined during implementation' over the 15-year lifespan of the Project." *Id.* at 1011. Similarly, for the Mid-Swan Project the Forest Service explains that during the "refinement" step of IGOR is when the agency will "review and finalize what treatments a particular area needs." DEIS Appendix A at A-9. The actual type of treatment and method, including timing and location, will not be determined until after field verifications to determine specific actions. *Id.*

at A-10, Table 1. The current NEPA analysis identifies nine "implementation units" within which logging or other types of treatment may occur. DEIS at 73. While the Forest Service provided detailed maps of potential vegetation treatments, these represent only possible actions, and not the actual areas or treatments that will occur. DEIS Appendix B. The failure to identify the location of actual treatment units and disclose site conditions before issuing a final ROD demonstrates the inherent flaws of relying on condition-based analysis or the "toolbox" approach since it is impossible for the public or the decisionmaker to understand the impacts to values or site-specific resource conditions that might be affected by treatment units or roads until post-decision. Because the Forest Service proposes to authorize these potential actions for a project area over 174,000 acres, and for any time over the next 15 years, the possibilities of what specific actions and the true nature of direct, indirect, and cumulative impacts are endless.

The Prince of Wales Project EIS "explain[ed] that siting decisions and the parameters of actual timber sales will be determined pursuant to an Implementation Plan . . . However, the EIS makes clear that these subsequent, site-specific decisions will not be subject to additional NEPA review. The Forest Service terms this approach 'conditions-based analysis.'" 443 F.Supp.3d at 1002- 1003. Likewise, for the Mid-Swan Project the Forest Service states that "[i]f all [IGOR] requirements are met, the Line Officer will sign the implementation checklist (Figure 11) authorizing the activity or activities. DEIS Appendix A at A-53. The entire IGOR process will take place outside the NEPA process just like the large landscape-scale Prince of Wales proposal rejected by the federal court.

The Prince of Wales EIS made assumptions "to capture the 'maximum effects' of the Project." 443 F.Supp.3d at 1002. It identified larger areas within which smaller areas of logging would later be identified, and approved the construction of 164 miles of road, but did "not include a determination--or even an estimate--of when and where the harvest activities or road construction authorized by each alternative will actually occur." Id. at 1009. The Forest Service attempts the same with this Mid-Swan Project, relying on Implementation Units and determining specific actions after field verification and surveys. In light of these legal flaws, and the recent federal court opinion rejecting the Forest Service's condition-based implementation approach, the agency should abandon this "big gulp" large landscape-scale project and instead move forward with site-specific projects under NEPA.

IV. Fails to provide for informed decisionmaking and meaningful public comment.

An EIS "shall provide full and fair discussion of significant environmental impacts and shall inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment." 40 C.F.R. [sect] 1502.1. An EIS should provide a clear basis for choice among alternatives by the decisionmaker and the public. 40 C.F.R. [sect] 1502.14. See also 36 C.F.R. [sect][sect] 220.4(c)(1) (requiring the Forest Service "complet[e] the environmental document review before making a decision on the proposal"), (4) (requiring the agency "Consider the alternatives analyzed in environmental document(s) before rendering a decision on the proposal").

Here, the Forest Service fails to articulate the proposed action with sufficient detail or information to allow for meaningful, informed public comment. Promises for future public involvement under Appendix A do not comply with NEPA's requirements. Neither does the Forest Service's "Sufficiency Review" process. See, e.g., DEIS at 44. Providing for informal public feedback periods for individual treatment proposals only after the ROD is approved runs contrary to NEPA's requirements for informed agency decisionmaking and meaningful public comment. Ultimately, the agency's condition-based approach and lack of site-specific information precludes opportunity for meaningful public review in violation of NEPA.

V. The analysis improperly relies on unsupported assumptions and runs contrary to best science.

Under CEQ's NEPA regulations the Forest Service has a duty to use high quality information and accurate scientific analysis. 40 C.F.R. [sect] 1500.1(b). The Forest Service has a duty to "insure the professional integrity, including scientific integrity, of the discussions and analyses" in an EIS, "identify any methodologies used," and

"make explicit reference by footnote to the scientific and other sources relied upon for conclusions" in an EIS. 40 C.F.R. [sect] 1502.24.

Here, the Forest Service makes numerous assumptions in its analysis, few of which are supported by any reasoning. 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 following scientific studies call into question the Forest Service's assumption that its proposed actions will achieve the stated purpose and need.

A. Assumptions about logging and wildfire

The Forest Service itself recognizes that much of the need for change is the result of more than a century of fire suppression and past timber management practices as well as road construction without appropriate maintenance and introduction of non-native pathogens. DEIS at 5. It admits that "human induced influences have degraded the landscape's capacity to sustain and recover from natural disturbances." *Id.* Despite these recognitions, here the agency flagrantly proposes additional timber management, claiming more management is needed to "create" a resilient forest. See, e.g., DEIS at 6 ("we identified needs that require management actions to restore or maintain terrestrial and aquatic biodiversity, and to reduce fire behavior in the WUI"); *id.* ("The Mid-Swan project identifies commercial timber harvest as a tool for ecological restoration"); DEIS at 8 ("Removal of ladder fuels and prescribed burning are other management activities that would reduce fuel loadings and improve forest resilience"). This approach lacks humility, fails to learn from the past mistakes, and is not supported by the agency's own project record or history in the project area.

The Forest Service proposes to continue heavy-handed forest management. See DEIS at 13 ("Management action is needed to counter these anthropogenic-influenced trends"). The Forest Service continues to rely on the false assumption[mdash]proven time and again over the past century[mdash]that the agency can successfully mimic natural processes. See, e.g., DEIS at 30 ("Even- aged regeneration harvests would achieve vegetation changes similar to high severity fire" whereas "[r]egeneration openings would . . . achieve vegetation changes similar to mixed severity fire"); *id.* (explaining harvest "would be designed to mimic low to mixed-severity fire"). The Forest Service proposes to log old-growth to reduce its loss to stand replacing wildfire by decreasing tree density, reducing understory fuels, and burning with prescribed fire.

We question the agency's assumptions that reducing tree densities and fuel loadings will result in less intense fire behavior. See, e.g., H. Powell, *Old Flames: The Tangled History of Forest Fires, Wildlife, and People*, available at <https://www.allaboutbirds.org/old-flames-the-tangled-history-of-forest-fires-wildlife-and-people>, All About Birds (last accessed July 2, 2019) (Attachment A) ("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 weather is ephemeral and invisible, while thick underbrush is easy to see and photograph").

Science shows that fuel treatments have a modest effect on fire behavior, and that fuel reduction does not necessarily suppress fire. See Lydersen, J., North, M., Collins, B. 2014. Severity of an uncharacteristically large wildfire, the Rim Fire, in forests with relatively restored frequent fire regimes. *Forest Ecology and Management* 328 (2014) 326-334 (Attachment K) (explaining that reducing fuels does not consistently prevent large forest fires, and seldom significantly reduces the outcome of large fires). Studies from the Forest Service's own Rocky Mountain Research Station refutes the Forest Service's assumptions that logging will result in less intense fire behavior. See, e.g., Calkin, D.E., et al., How risk management can prevent future wildfire disasters in the wildland-urban interface, *PNAS* (2014), Vol. 111 No. 2:746-751 (Attachment B) ("Paradoxically, 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, G and Pierce, J. 2007. Long-Term Fire History from Alluvial Fan Sediments: The Role of Drought and Climate Variability, and

Implications for Management of Rocky Mountain Forests. Jennifer Pierce and Grant Meyer. *International Journal of Wildland Fire* 17(1) 84-95 (Attachment L).

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. See Carey, H. and M. Schumann. 2003. *Modifying Wildfire Behavior-the Effectiveness of Fuel Treatments: the Status of our Knowledge*. National Community Forestry Center (Attachment M); Rhodes, J. 2007. *The Watershed Impacts of Forest Treatments to Reduce Fuels and Modify Fire Behavior*. Pacific Rivers Council, Portland OR (Attachment N).

Logging to address fire is undermined by the fact that land managers have shown little ability to target treatments where fires later occur. See Barnett, K., S.A. Parks, C. Miller, H.T. Naughton. 2016. *Beyond Fuel Treatment Effectiveness: Characterizing Interactions between Fire and Treatments in the US*. *Forests*, 7, 237 (Attachment E); Rhodes, J. and Baker, W. 2008. *Fire Probability, Fuel Treatment Effectiveness and Ecological Tradeoffs in Western U.S. Public Forests*. *The Open Forest Science Journal*, 2008, 1 (Attachment J) (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 or nontreatment 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 could even make fire worse—exacerbating the problems the Forest Service is claiming to address. Fuel reduction may actually exacerbate fire severity in some cases as such projects leave behind combustible slash, open the forest canopy to create more ground-level biomass, and increase solar radiation which dries out the understory. See, e.g., Graham, R.T., et al, 2012. *Fourmile Canyon Fire Findings*, USDA For. Serv. Gen. Tech. Rep. RMRS-GTS-289. Ft. Collins, CO. See also Martinson, E. J. and P. N. Omi (2013) *Fuel treatments and fire severity: A meta-analysis*. Res. Pap. RMRS-RP103WWW. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 38 p (finding that in about a third of cases reviewed mechanical fuel reductions increased fire spread).

We question the wisdom of attempting to control wildfire instead of learning to adapt to fire. See Powell 2019 (noting that severe fires like the 2017 Rice Ridge fire on the Flathead National Forest are inevitable and unstoppable). See also Schoennagel, T., et al., *Adapt to more wildfire in western North American forests as climate changes*, *PNAS* (2017) Vol. 114 no. 18:4582-4590 (Attachment C) ("Our 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 Forest Service recognizes that past logging and thinning practices may have actually increased risk of intense fire behavior on this landscape. But instead of learning from these past mistakes, here the Forest Service is committing to the same mistakes by proposing to continue to log the landscape.

We 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.). The Forest Service's proposal here is especially concerning, given the focus on treatments outside of the WUI. Impacts from climate change, including changing weather patterns and drought, are the driving factors for wildfires. Instead of focusing on logging to manage the forest, the Forest Service should focus on how it needs to change its practices to adapt to the changing climate.

B. Assumptions about logging and forest resilience

The Forest Service states that this "landscape is at high risk to large-scale disturbances like insect and disease outbreaks and stand-replacing fires, which may jeopardize the survival of remaining medium to large trees." DEIS at 8. The Forest Service points to Hauffer et al. (2016) to support its conclusion that "the greatest needs are to restore open canopy forests with very large tree components with emphasis on warm-dry and cool-moist habitat types." DEIS at 8. Even for areas that currently have large fire-resilient trees like ponderosa pine, western larch, and Douglas-fir over 16 inches diameter at breast height, the Forest Service suggests cutting these stands because they "may benefit from thinning to improve growth and vigor and to reduce risk of loss from high severity crown fire and insects." DEIS at 8. Best available science does not support the Forest Service's statements. See Hart, S.J., T. Schoennagel, T.T. Veblen, and T.B. Chapman. 2015. Area burned in the western United States is unaffected by recent mountain pine beetle outbreaks. *Proceedings of the National Academy of Sciences*. Vol. 112, No. 14. (Attachment F) (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); Hart, S.J., and D.L. Preston. 2020. Fire weather drives daily area burned and observations of fire behavior in mountain pine beetle affected landscapes. *Environ. Res. Lett.* 15 054007 (Attachment G) (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"); Black, S. H., D. Kulakowski, B.R. Noon, and D. DellaSala. 2010. *Insects and Roadless Forests: A Scientific Review of Causes, Consequences and Management Alternatives*. National Center for Conservation Science & Policy, Ashland OR (Attachment H) (finding, inter alia, that thinning is not likely to alleviate future large-scale epidemics of bark beetle); Six, D.L., et al., Are Survivors Different? Genetic-Based Selection of Trees by Mountain Pine Beetle During a Climate Change- Driven Outbreak in a High-Elevation Pine Forest, *Front. Plant. Sci.* 9:993, doi: 10.3389/fpls.2018.00993 (Attachment D) (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[mdash]as opposed to logging them[mdash]to act as primary seed sources could act to promote adaptation); Six, D.L., E. Biber, E. Long. 2014. Management for Mountain Pine Beetle Outbreak Suppression: Does Relevant Science Support Current Policy? *Forests*, 5 (Attachment I) (noting "[s]tudies conducted during outbreaks indicate that thinning can fail to protect stands").

Ultimately, science supporting logging as a way to improve forest resilience to large-scale disturbances such as high severity crown fire and insects is weak and numerous studies question this approach or have found it to be ineffective. In addition, all mechanized fuel treatments guarantee damage to ecosystem components, including soils, aquatics, and vegetation; they also have the potential to spread exotic plants and pathogens.

C. Assumptions about logging and wildlife habitat

Building on the previous assumptions, the Forest Service claims that through vegetation management the agency can restore natural levels of forest heterogeneity to promote habitat resilience. We question the agency's assumptions that the proposed actions will improve the diversity and resilience of forest vegetative communities and associated wildlife habitat.

Recent ecological research has shown that fire is an integral component to the function and biodiversity of many plant and animal communities, and that the organisms within those communities have adapted to withstand, and even benefit from, both low and high severity fire. See, e.g., Bond, et. al, 2012, A New Forest Fire Paradigm: The need for high severity fires, *The Wildlife Professional*, Winter (Attachment O). Ecologists now conclude that fire-mediated age- class diversity is essential to the full complement of native biodiversity and fosters ecological resilience and integrity. Hanson, C. et.al, 2015, Setting the Stage for mixed-and High-Severity Fires, *Nature's Phoenix* (Attachment P). In conifer forests of North America, higher-severity fire patches create a type of habitat known as complex early seral forest that supports levels of native biodiversity, species richness, and wildlife abundance that are generally comparable to, or even higher than, those in unburned old forest. Id.

As one specific example, the agency asserts that existing mature lynx and snowshoe hare habitat in the region is at high risk of large, stand-replacing fire, and that vegetation management will get rid of that risk. DEIS at 9 ("strategically reducing fuels in and around [core areas or potential core areas] . . . would help protect core areas from large-scale loss due to wildfire"). The Forest Service does not cite to any studies to support this assumption. The agency does point to the 2003 Crazy Horse Fire and 2017 Rice Ridge Fire as examples of stand-replacing fire. DEIS at 9. The agency concludes that actions towards "reestablishing a landscape pattern more closely aligned with the natural range of variation . . . would better support the persistence of all native species." DEIS at 14. Yet the Forest Service assumes, without support, that active management is needed to reestablish natural processes. See, e.g., *id.* ("native species would benefit from management actions that realign habitat patches and promote natural disturbance regime"). It ignores the option of natural processes re-establishing naturally.

The Forest Service's own science undercuts the agency's assumptions in this DEIS. From the

U.S. Forest Service's Fire Effects Information System, Ulev (2007) (*Lynx canadensis*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: www.fs.fed.us/database/feis/mammal/lyca/all.html [last accessed Oct. 6, 2020]):

Vegetation structure and season may influence habitat preference for Canada lynxes. Canada lynxes preferred regenerating habitat (about 30 years following a wildfire) over mature white spruce and alpine-subalpine habitats in Whitehorse, Yukon. Regenerating lodgepole pine stands were preferred over white spruce- willow (*Salix* spp.) stands of the same age. During winter, Canada lynxes preferred riparian willow (*Salix* spp.) stands over mature white spruce and alpine areas, probably due to high snowshoe hare numbers. Eighty-six percent ($n=103$) of radio-collared Canada lynxes were located in regenerating habitat where snowshoe hares were most abundant. For more details about habitat preference based on season, age, and sex of Canada lynxes, see Mowat and Slough (2003). Further, and most importantly, Mowat and Slough (2003) found that logging regeneration will not likely have the positive effects for lynx that burns do.

As another specific example, the Forest Service cites to Ruby (2014) to question the impact of forest roads on grizzly bears in the Swan Valley. See DEIS at 248 (stating that "activities associated with forest roads, as opposed to the roads themselves, [are] the primary risk and driver of bear behavior"); 249 ("found that grizzly bears did not select against high or low densities of restricted roads at the valley scale"); 250 ("grizzly use of the landscape is widespread across the low to middle elevation regions, regardless of road densities and development"). This, despite best available science, including the Forest Service's own science, showing that forest roads do harm grizzly bears. See, e.g., 66 Fed. Reg. 3206, 3208 (Jan. 12, 2001) ("Scientific evidence compiled to date [2001] suggests that roads are a significant source of erosion and sedimentation and are, in part, responsible for a decline in the quality of fish and wildlife habitat."). See also DEIS at 246 (noting that "bears have benefitted from the consistent removal of roads from the landscape").

Ruby (2014) largely documented the high-risk behavior of bears in the Swan Valley that have suffered unsustainably high mortality when failing to avoid roads and human development. The study acknowledged that the "research did not examine mortality risk for grizzly bears within the study area," and that "mitigating grizzly bear mortality risk in the presence of humans is a management concern." Plus, the Ruby (2014) study included a high proportion of rural area, and thus application of its findings to forest system lands in general[mdash]especially lands outside of rural zones[mdash]should be limited. Other studies have shown that grizzly bear survival was best in areas with low road densities and adequate hiding cover. See, e.g., Joint Statement of Undisputed Facts in Support of Plaintiffs' Joint Motion for Summary Judgment, *WildEarth Guardians v. Steele*, Case 9:19-cv-00056-DWM (D. Mont, Aug. 5, 2020) (Attachment Q), pages 10-13 (summarizing studies documenting negative impacts to grizzly bears from roads and high road densities).

At bottom, we question the Forest Service's over-reliance on vegetation management - as opposed to other forms of restoration, including road decommissioning - to improve the diversity and resilience of the forest and wildlife habitat. Science shows that natural processes like fire are vital for recruitment of down wood into the ecosystem, create a diversity of wildlife habitat, and naturally thin forests. Hanson, C., 2010. Myth of "Catastrophic" Wildfire: A New Ecological Paradigm of Forest Health. John Muir Project Technical Report. Cedar Ridge, CA (Attachment R). The Forest Service's attempts to mimic natural processes have failed in the past, and as we have seen in recent decades, are likely to continue to fail. Instead of proposing intensive management actions for the next 15 years, the Forest Service should let natural processes take their course.

Another assumption that the Forest Service ignores is that historic mis-management is the main reason for the forests we see today. But this ignores the government's forcible removal of Indigenous people from the landscape. And with that removal, the government eliminated millennia of knowledge. The Forest Service should not only rethink suppressing wildfires, but rethink forest management and rethink who is making those management decisions.

VI. Address opposing scientific viewpoints.

The Forest Service has a duty to disclose and respond to opposing scientific viewpoints or countervailing information in the final EIS itself. 40 C.F.R. [sect] 1502.9(b). See *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1213-14 (9th Cir. 1998) (holding EA inadequate where Forest Service failed to reference material containing scientific viewpoints opposing agency's conclusions about the environmental consequences of post-fire logging); *Bark*

v. United States Forest Service, 958 F.3d 865, 870-71 (9th Cir. 2020) (holding an EIS was required where "[s]ubstantial expert opinion . . . disputes the USFS's conclusion that thinning is helpful for fire suppression and safety"); *Sierra Club v. Bosworth*, 199 F.Supp.2d 971, 979-80 (N.D. Cal. 2002) (holding Forest Service violated NEPA by failing to disclose the lack of scientific support for its belief that logging would reduce the intensity of future wildfires, and failing to address contradictory science).

As discussed in the preceding section, substantial expert opinion disputes the Forest Service's conclusion that logging is helpful to (1) restore and maintain the terrestrial and aquatic biodiversity in light of a changing climate, and (2) reduce fire behavior in the WUI. The Forest Service must disclose these opposing viewpoints, including expert opinions, that challenge the science of using logging to manage future wildfire risk and enhance wildlife habitat. The agency must explain why best available science refuting its assumptions and undermining the stated purpose and need for this project does not apply to this project.

VII. Failure to adequately assess and disclose direct, indirect, and cumulative impacts, including detailed, site-specific information.

Federal agencies must discuss the direct, indirect, and cumulative effects of their actions and reasonable alternatives in the EIS. 40 C.F.R. [sect][sect] 1502.16, 1508.8. An EIS must analyze the direct, indirect, and cumulative impacts of "past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." 40 C.F.R. [sect] 1508.7; see also [sect][sect] 1508.8 (including ecological, aesthetic, historical, cultural, economic, social and health impacts) and 1508.25(a)(2), (c). Cumulative effects are "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions." 40 C.F.R. [sect] 1508.7 (1978). Forest Service regulations define reasonably foreseeable future actions as "[t]hose Federal or non-Federal activities not yet undertaken, for which there are existing decisions, funding, or identified proposals." 36 C.F.R. [sect] 220.3.

The Forest Service may not ignore topics if the information is uncertain or unknown. Where information is lacking

or uncertain, the Forest Service must make clear that the information is lacking, the relevance of the information to the evaluation of foreseeable significant adverse effects, summarize the existing science, and provide its own evaluation based on theoretical approaches.

Further, site-specific analysis is crucial to NEPA's goal of ensuring informed and science-based decision-making. The Forest Service must provide sufficient information for the public to understand the scope of the proposed activities. In order to fully comply with NEPA, the Forest Service must adequately assess and disclose numerous impacts, including impacts from forest roads and motorized use, logging, climate change, and impacts to wildlife. The Forest Service must also assess and disclose the cumulative impacts of forest roads, access and fire; and forest roads and climate change. Yet, the Mid-Swan EIS lacks the necessary information and analysis that is essential for understanding impacts and providing meaningful, informed public comment as we detail below.

The Forest Service should provide detailed, site-specific information regarding existing conditions. We are particularly concerned about the Forest Service's lack of disclosure regarding the location of timber sales proposed for authorization over the next 15 years, site-specific impacts to grizzly bear, Canada lynx, lynx critical habitat, bull trout and its designated critical habitat, wolverine, and water quality. Without this site-specific information, the Forest Service is unable to take the required "hard look" at the impacts of its proposal and the public is unable to provide meaningful and informed public comment. Listing potential design criteria, best management practices, or thresholds in the Implementation Guide on Restoration (Appendix A of DEIS) is insufficient.

As one example, the Forest Service notes that there is no up-to-date map of old growth available for the project area, and site-specific surveys are necessary. The agency proposes such studies prior to implementation, but after approving its decision. DEIS at 8. As another example, the analysis fails to disclose specific locations of the timber sales for the next 15 years, withholding this information until after the NEPA process is complete. See, e.g., DEIS Appendix A at A-9 (explaining that the agency will "review and finalize what treatments a particular area needs" during the "refinement" step of IGOR). As noted, the actual type of treatment and method, including timing and location, will not be determined until after field verifications to determine specific actions. Id. at A-10, Table 1.

A. Failure to utilize an appropriate baseline

In order to fully disclose the environmental consequences between alternatives as NEPA requires, the Forest Service must differentiate between the existing condition in its No Action Alternative and the legal baseline of system roads and trails. The CEQ recognizes the baseline and no-action alternative can, and sometimes do differ.¹ As such the analysis of the road system and related impacts in this project area should recognize and build on this distinction.

Specifically, the agency must differentiate between system and unauthorized roads, the latter of which includes existing road templates the agency proposes for new road construction and newly acquired Plum Creek roads that have yet to undergo any site-specific analysis adding them to the system. DEIS at 66. The baseline should only include system roads and be separate from the no action that retains the existing condition. Such an approach is necessary in order to fully disclose the environmental consequences of the no action alternative. By failing to include a baseline of only system roads and trails in its analysis, the Forest Service failed to properly disclose the effects of the no-action alternative, which then skews the analysis for the action alternatives.

Adding existing road prisms to the National Forest System is not a simple administrative action, and the agency cannot just assign road numbers in INFRA by claiming there are no immediate on-the-ground actions or direct effects from expanding the road system. While there may be no immediate effects because the unauthorized and other non-system roads are part of the existing condition, the fact remains that the Forest Service must account for their potential environmental consequences. Without differentiating between system and unauthorized roads

in the EIS, the Forest Service fails to adequately disclose the direct, indirect and cumulative effects to lands, water, and wildlife of the total road system, including those the agency proposes to construct.

To illustrate, the Forest Service explains "[r]oad aquatic risk was calculated using GIS spatial relationships between roads and the aquatic ecosystem. The GRAIP- Lite model was used to provide additional risk data for road segments most likely to contribute sediment to the aquatic ecosystem." DEIS at 162. For the No Action Alt. the agency explains the "existing road system" would remain unchanged. Id. at 171. This suggest that the Forest Service only included system roads in its analysis, which omits unauthorized and non-system roads. The other interpretation is that the agency included all existing roads no matter their status. The Forest Service fails to differentiate or disclose the miles of non-system roads, so it is unclear how much sediment occurs from system roads versus unauthorized roads. Without fully accounting for unauthorized roads in its analysis, any finding of no significant impact will be arbitrary and capricious, and a violation of NEPA.

B. Inappropriate reliance on resource protection measures and implementation guide for mitigation

An EIS must include a discussion of possible mitigation measures to avoid adverse environmental impacts. See 42 U.S.C. [sect] 4332(2)(C)(ii); 40 C.F.R. [sect][sect] 1502.14(f), 1502.16(h), 1508.14, 1508.25(b)(3). Id. at [sect] 1508.20 (defining "mitigation" to include "[a]voiding the impact altogether," "[m]inimizing the impacts by limiting the degree or magnitude of the action," "[r]ectifying the impact by repairing, rehabilitating, or restoring the affected environment"). The discussion must be "reasonably complete" to "properly evaluate the severity of the adverse effects" of a proposed project prior to making a final decision. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 351-52 (1989) (holding sufficient an EIS that described specific mitigation that could be taken, even without assurances those measures would be taken).

Here, the Forest Service must discuss and disclose the effectiveness of mitigation, including impacts that may not be avoided even with the proposed mitigation. Instead, the agency points to the Implementation Guide on Restoration (Appendix A of DEIS) that includes design criteria, best management practices, and thresholds to mitigate effects of the proposed actions. Reliance on appendix A is inadequate. For example, the Forest Service points to design criteria in appendix A to address "secondary concerns associated with new road construction." DEIS at 36. By failing to assess or discuss where and how the specific design criteria will be applied (or not) during implementation, the Forest Service fails to disclose the effectiveness of its mitigation for impacts from new road construction. The Forest Service should consider mitigation efforts of decommissioning roads to reduce the road system to levels where research shows the road system no longer harms threatened grizzly bears.

Further, the Forest Service cannot simply assume project design criteria and best management practices will be implemented correctly 100 percent of the time or be 100 percent effective. Therefore the agency cannot simply cite to the use of BMPs as a rationale for omitting proper analysis in the DEIS. Specifically, the Forest Service states "[b]est management practices will be installed on all system roads identified for haul prior to timber harvest. Best management practices are defined by Soil & Water Conservation Practices in FSH 2509.22." DEIS Appendix A at A-41. Yet, the Forest Service fails to adequately account for the likely scenario where these BMPs fail to provide adequate mitigation. Attachment S of these comments includes a report titled, "The Environmental Consequences of Forest Roads and Achieving a Sustainable Road System (March 2020)." Section III of this report details the inconsistencies and ineffectiveness of utilizing mitigation measures, which supports the need for more detailed analysis in an EIS to support the Forest Service's reliance on design criteria and BMPs for the Mid-Swan project.

Specifically, when considering how effective BMPs are at controlling nonpoint pollution on roads, both the rate of implementation, and their effectiveness should both be considered. The Forest Service tracks the rate of implementation and the relative effectiveness of BMPs from in-house audits. This information is summarized in the National BMP Monitoring Summary Report with the most recent data being the fiscal years 2013-2014. Carlson et al. 2015. The rating categories for implementation are "fully implemented," "mostly implemented,"

"marginally implemented," "not implemented," and "no BMPs." "No BMPs" represents a failure to consider BMPs in the planning process. More than a hundred evaluations on roads were conducted in FY2014. Of these evaluations, only about one third of the road BMPs were found to be "fully implemented." Id. at 12.

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

Further, a technical report by the Forest Service entitled, "Effectiveness of Best Management Practices that Have Application to Forest Roads: A Literature Synthesis," summarized research and monitoring on the effectiveness of different BMP treatments for road construction, presence and use. Edwards et al. 2016. The report found that while several studies have concluded that some road BMPs are effective at reducing delivery of sediment to streams, the degree of each treatment has not been rigorously evaluated. Few road BMPs have been evaluated under a variety of conditions, and much more research is needed to determine the site-specific suitability of different BMPs (Edwards et al. 2016, also see Anderson et al. 2011). Edwards et al. (2016) cites several reasons for why BMPs may not be as effective as commonly thought. Most watershed-scale studies are short-term and do not account for variation over time, sediment measurements taken at the mouth of a watershed do not account for in-channel sediment storage and lag times, and it is impossible to measure the impact of individual BMPs when taken at the watershed scale. When individual BMPs are examined there is rarely broad-scale testing in different geologic, topographic, physiological, and climatic conditions. Further, Edwards et al. (2016) observes, "[t]he similarity of forest road BMPs used in many different states' forestry BMP manuals and handbooks suggests a degree of confidence validation that may not be justified," because they rely on just a single study. Id. at 133. Therefore, ensuring BMP effectiveness would require matching the site conditions found in that single study, a factor land managers rarely consider.

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

Significant uncertainties persist about BMP or design criteria effectiveness as a result of climate change, compounded by the inconsistencies revealed by BMP evaluations, which suggests that the Forest Service cannot simply rely on them to mitigate project-level activities. It is arbitrary and capricious for the Forest Service to assume 100 or even 80 - 90 percent proper BMP implementation and effectiveness as a rationale for making conclusory statements that fail to address BMP uncertainties. For example, the Forest Service states "the implementation of project design criteria BMPs are documented to be successful at preventing sediment delivery to streams (Sugden 2018)." DEIS at 181. Yet, the analysis fails to show how Sugden 2018 addresses the results found in Carlson et al. 2015 and Edwards et al. 2016. The omission is serious given that the Forest Service asserts "[n]egligible effects to the aquatic ecosystem are expected to occur with many project activities due to the general spatial separation from disturbed areas and the aquatic ecosystem, careful RMZ management, and application of design features and BMPs (see appendix A)." DEIS at 175.

Moreso, the Forest Service fails to demonstrate how road-specific BMP effectiveness will be maintained in the long term, especially given the lack of adequate road maintenance capacity, which is a serious omission given the agency's acknowledgement that historically it has had inadequate funding to maintain roads to standard.

C. Failure to sufficiently analyze aquatic ecosystems

Overall, the Forest Service analysis for aquatic ecosystems, including watershed conditions fails to provide the requisite hard look NEPA requires, and omits key factors that the agency must address in its subsequent analysis. For example, the Forest Service explains that it used three main indicators and 15 different measures to evaluate aquatic ecosystems, which includes potential impacts to bull trout and westslope cutthroat trout. DEIS at 154. The three indicators include fine-grained sediment delivery, conditions within riparian management zones and the conservation of aquatic biodiversity. Id. at 160-61, Table 112. Notably, the Forest Service states that "[t]he project landscape is defined by four spatially distinct areas: 1) aquatic system, 2) IRMZs, 3) ORMZs, and 4) uplands." Id. at 156. Yet, it is unclear what indicators or measures apply specifically to upland areas or watersheds. Only one measure for conservation of aquatic biodiversity seems to look more broadly at the whole watershed by utilizing a measure based on changes to the Watershed Condition Framework (WCF) ratings determined by GIS calculated changes, not actual field monitoring or verification. Id. at 160-61, Table 112. The omission is significant given that upland areas represent "the largest portion of the project area, upslope from streams, waterbodies, wetlands, IRMZs and ORMZs, covering about 75% of the project area." Id. at 158. Further, the Forest Service explains two (Jim Creek & Cold Creek) of the twelve watersheds had "functioning at risk" WCF ratings, but asserts they are now functioning properly:

Although the Forest Plan rated Cold Creek and Jim Creek as "at risk", recent road work implemented with the Chilly James Environmental Assessment over the last five years has resulted in improved watershed condition framework ratings for the Cold and Jim watersheds, changing their condition rating to "Properly Functioning" (pers. comm. B. Gardner, 2020).

DEIS at 171.

Missing from the analysis is the fact that each of these HUC 12 watersheds were rated poor for the road and trail indicator, which includes four attributes that the agency failed to properly consider: open road density, maintenance, proximity to water, and mass wasting.² The Forest Service did not disclose if the road/trail indicator improved to a "fair" or "good" condition, which is a serious concern given both watersheds are part of the Conservation Watershed Network. In addition, the Forest Service failed to analyze road density as part of the aquatic ecosystem analysis, which is a major failing. The attached report explains the importance of using road densities to determine potential environmental consequences to aquatic habitats. Attachment B at 9. Moreso, the Forest Service recognizes the importance of utilizing road density as an aquatics indicator:

Road density provides a metric for road development in a watershed, and is used as an indicator of road impact on water quality and quantity. A Columbia River Basin study found that watersheds with a greater road density have decreased capability of supporting strong populations of key salmonids (USDA Forest Service 1996).

Lolo National Forest, Sawmill-Petty EA, Hydrology Report at 6.

Given the proposed road construction under Alternative B, in addition to opening currently closed roads, the Forest Service should have utilized road density calculations as a measure of overall watershed conditions, and more specifically, disclosed density calculations within the Riparian Management Zones.

Another example of the agency's failings is in regards to potential stream sedimentation. Specifically, the Forest Service explains that it utilized the GRAIP-lite model to measure existing sedimentation and determine potential sedimentation from the action alternatives. DEIS at 162, 165, 174. The agency's analysis determined that new road construction under Alternative B would result in an additional 5,181 kg/yr and 715 kg/yr under Alternative C. Id. at 175 Yet, the Forest Service asserts road decommission and storage treatments will effectively offset the

additional sedimentation resulting in an overall decrease of 26%. Id. at 174, 175. However, the Forest Service erroneously assumes storage treatments will be 100 percent effective, a fallacy we discuss above, and even more problematic is the assumption that all decommissioning and storage treatment will actually occur, which is completely arbitrary and capricious given the agency's acknowledgement that "[i]mplementation of restoration actions, under either action alternative, would be subject to available funding at the time of implementation and do not guarantee full deployment of proposed activities unless specified as necessary mitigation or design criteria." DEIS at 47. It is unclear if decommissioning and storage are considered "necessary mitigations," but regardless the Forest Service fails to disclose how much funding will be necessary to remove or store roads, the available funding for such actions and how the agency intends to compensate for likely shortfalls. As such, the Forest Service cannot rely on offsets to claim sedimentation from road construction will not further degrade water quality.

This is especially true given that the GRAIP-lite model did not include sedimentation from temporary road construction. DEIS at 174 (asserting, "these roads are not additions to the NFS road system, and are rehabilitated after use, typically within five years of their construction). The agency's logic fails here since construction related sedimentation will occur at the time the temporary road is built, just like for permanent roads. Use of temporary roads will also cause sedimentation, during the time of their use, and then until they are removed. The Forest Service expects permanent roads to be in use for up to 5 years until they are stored. DEIS at 174. As such it is reasonable to assume the same time period for temporary road use, but "temporary roads would be reclaimed within five years of individual project completion. Id. at 66. That means temporary roads could persist on the landscape for up to 10 years. As such the Forest Service must include them in its GRAIP-lite model.

In addition, the Forest Service states that "most existing Forest Service roads would potentially be utilized as a haul route." DEIS at 175. This includes currently closed, stored and blocked roads that are currently impassable will require some degree of reconstruction to bring them up to standard for log haul use. Of the 601.7 miles of existing roads, 171.7 miles are currently closed, 38.4 miles are stored and 254.3 are gated. DEIS Project File H-010, Table 1. The Forest Service fails to include reconstruction or other treatments of these roads (464.4 mi) in its sediment modeling, thereby skewing the results displayed in the analysis. DEIS at 175, Table 117.

Finally, the Forest Service did not disclose the GRAIP-lite model result for sedimentation due to log haul activities. The agency explains "[t]he use of heavy log trucks on Forest Service roads would likely cause an increase in the movement of road surfacing to the aquatic ecosystem, especially at road crossings and haul while the road fill is saturated." DEIS at 175. Yet, Table 117 lacks any corresponding column for sedimentation related to road use. Id. This is perhaps the most glaring omission since the Forest Service must demonstrate how it is complying with Montana's water quality standards. Two streams (Jim Creek and Goat Creek) within the Mid-Swan project area are currently listed as impaired for sediment and on the MDEQ 303(d) list, although Jim Creek is currently proposed for delisting." DEIS at 166. The agency needs to demonstrate how increased sedimentation from all road construction activities, as well as from road use will affect water quality in both impaired streams. Specifically, the agency needs to disclose the pollution budget for each impaired stream segment and how increased sedimentation from each action alternative compares.

D. Failure to properly analyze impacts to Bull Trout & Westslope Cutthroat Trout

The Forest Service explains its analysis on the effects to aquatic biodiversity uses native bull trout (*Salvelinus confluentus*) and westslope cutthroat trout (*Oncorhynchus clarki*) as indicator species. DEIS at 158. "The USFWS has designated 140 miles of stream in the project area as bull trout critical habitat (figure B-39), with 83 of those miles located on FS-managed land. Designated critical habitat includes stream reaches above currently or potentially occupied habitat." Id. at 158-59. In addition, "[t]here are about 30 miles of stream identified as WCT conservation populations, with about 26.1 of those miles on FS-managed lands. There are 11 distinct stream reaches with WCT conservation populations, and 12 stream reaches with bull trout spawning and rearing habitat.

WCT conservation populations and bull trout key spawning reaches do not spatially overlap (figure B-39). *Id.* The Forest Service acknowledges that changes to habitat conditions are the primary threat, in addition to non-native competition. *Id.* at 159. The DEIS also shows declining bull trout redds since 2008 among core populations. *Id.*, Figure 16.

To address the threat to habitat and declining bull trout populations, the agency explains the Mid-Swan project focuses on reductions in fine grain sedimentation and "re-establishing a mosaic of RMZ disturbance." DEIS at 159. The Forest Service fails to demonstrate how current vegetation conditions within the RMZ are contributing to the decline of bull trout populations or harming the viability of WCT population in the project area. In fact, the entire "need" to conduct vegetation treatments within the RMZ stems from the Flathead Forest Plan direction, and past forestry practices as well as fire suppression that created "vegetative conditions that are denser and exhibit less structural diversity than natural conditions" DEIS at 20. The Forest Service asserts that implementing more forestry practices in the RMZ will "mimic natural disturbance." *Id.* at 21. We disagree. As explained at length in section V of these comments, the Forest Service has yet to demonstrate the efficacy of forestry practices, particularly timber harvesting and mechanical treatments, in restoring ecological processes, which is especially applicable in the RMZ given they are typically cooler and wetter. In fact, the entire need for logging within the RMZ rests upon the assumption that a theoretical wildfire will cause more harm to riparian conditions than the resulting sedimentation, soil compaction and altered habitat resulting from the action alternatives. Yet, the agency's analysis fails to support this assumption or measurably demonstrate how past fires within the RMZ harmed aquatic conditions more than what the agency proposes under each action alternative. In essence, the Forest Service is trading theoretical impacts for actual harm to riparian habitats.

For example, under Alternative B "[a]n additional 800 acres of RMZ would be directly affected by the construction of new roads which pass through the RMZ network." DEIS at 36. For Alternative C that number is 220 acres. *Id.* "The existing road density includes 154 miles of Forest Service managed roads within the Mid-Swan RMZ network." DEIS at 21. Yet the agency fails to disclose the actual density or how they would change under each action alternative. The analysis shows log hauling under Alternatives B and C would require use of 40.7 miles and 39.3 miles of roads respectively within the inner RMZ, but the analysis omitted any corresponding number for roads within the outer RMZ. Looking within 0.25 mile area of fish habitat, the Forest Service discloses that under Alternatives B and C there would be maintenance and improvement on 72.1 miles and 67.1 miles respectively utilized for log hauling. Yet, the Forest Service failed to calculate potential sedimentation from log hauling within either the IMRZ or within the 0.25 mile area of fish habitat. The agency also failed to provide the current conditions of roads proposed for use such as the road status and degree of vegetative growth on roads in need of treatment.

In addition, the agency omitted the crucial detail of how many roads currently provide shade and cover within the IMRZ that would be removed under each action alternative. Road construction within the IMRZ coupled with vegetation removal due to road improvement will result in degraded riparian condition within 100 ft of fish occupied streams. Yet, the Forest Service simply assumes these areas will provide an adequate buffer for all harmful effects from the 9,265 acres of mechanical treatments in the outer RMZ under Alternative B. DEIS at 180-81 (stating "Downslope IMRZs would filter any ORMZ effects before they interact with the aquatic ecosystem."). Such a conclusory statement is unsupported by the analysis.

Another flaw of the agency's fisheries analysis is its failure to disclose PIBO survey results or utilize PIBO monitoring categories to evaluate each alternative. The Forest Service states that the "[e]xisting condition of the aquatic ecosystem was derived from the PIBO survey reports completed for the Forest Plan, supplemented by more recent local PIBO surveys (Gardner, 2019)." DEIS at 162. Yet, the Forest Service did not disclose those survey results or use PIBO measures to determine the potential effects to WCT or bull trout and its critical habitat. In fact, the agency failed to include any dedicated analysis for the 83 miles of bull trout critical habitat that is within Forest Service jurisdiction, specifically the potential effects from each alternative. Likewise, for the 26.1 miles of stream identified as WCT conservation populations. In fact, given the Forest Service used bull trout and

WCT as an indicator for aquatic biodiversity, the DEIS lack detailed discussion on the potential effects to these species under each alternative. More troubling, is that the limited analysis the agency does utilize concludes:

Alternative B and alternative C would both likely to adversely affect ESA threatened bull trout and their critical habitat. Road-related short-term and long-term changes in sediment delivery to occupied habitat and IRMZ natural fuels treatments would likely negatively affect spawning reaches, while short-term and long-term reductions in sediment delivery are expected as road decommissioning, storage and haul route improvements are implemented... Alternative B and alternative C would both impact individual westslope cutthroat trout and their habitat (as a result of similar project effects, as described for bull trout, above), but would not lead towards federal listing under the ESA.

DEIS at 189.

It is important to note again here that road decommissioning offsets are not guaranteed, and due to the analysis flaws we describe above, it is arbitrary for the agency to conclude that the action alternatives would not lead WCT towards federal listing under the ESA. Moreso, characterizing harmful effects as short term is completely arbitrary since they can potentially last 5-10 years for road actions as we note above, and longer for vegetation to establish and provide sufficient riparian habitat and cover.

Overall, the lack of specific analysis undermines the agency's analysis of effect to WCT, bull trout and its critical habitat, especially the failure to disclose road-related sedimentation from log haul use, failure to utilize road densities and PIBO measures in the analysis, and the failure to disclose current road condition within the RMZ and how they would change under the action alternatives.

E. Failure to adequately analyze impacts to grizzly bears, lynx, or wolverine

The Forest Service fails to analyze direct, indirect, and cumulative impacts to grizzly bears, Canada lynx and its critical habitat, and wolverine. As described in the NFMA and ESA sections below, the proposed action lacks sufficient detail to understand when, where, and how (i.e., the particular treatment types) the Forest Service will complete treatment units and the necessary road work to complete those treatments. This also includes insufficient information regarding the road storage, closure, and decommissioning work the agency relies on to mitigate or "offset" impacts to wildlife and habitat.

F. Failure to fully analyze roads

As we explain above, the Forest Service must identify a sustainable road system as part of the project, especially in light of the fact that road actions are a major part of this proposal. While we commend the Forest Service for producing and utilizing a project specific travel analysis report (TAR) to inform the overall project analysis, the project fails to properly disclose the environmental consequences from road activities under each alternative as we note throughout these comments or actually identify the minimum road system (MRS) per the requirements under subpart A of the Forest Service's travel rules. See 36 C.F.R. [sect] 212.5(b)(1) ("For each national forest, . . . the responsible official must identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands... The minimum road system is the road system determined to be needed to meet resource and other management objectives adopted in the relevant land and resource management plan (36 CFR part 219), to meet applicable statutory and regulatory requirements, to reflect long-term funding expectations, to ensure that the identified system minimizes adverse environmental impacts associated with road construction, reconstruction, decommissioning, and maintenance.").

While we acknowledge and thank the Forest Service for producing the Mid-Swan project TAR, the Forest Service failed to include any dedicated section with the DEIS that summarized or synthesized the TAR findings. DEIS at Table of Contents. Given the agency incorporates numerous findings and recommendations for the project-level

TAR, it is crucial for the Forest Service to provide a dedicated road analysis in the EIS. EIS at 161 (stating, "A travel analysis was conducted during the project development stage to assess the current forest transportation system and develop the road-related proposed actions within the Mid-Swan project area."). A dedicated roads section in the EIS is necessary to explain the travel analysis methods, the risk and benefit indicators and summarize the TAR results, especially the miles of road utilized for log hauling that have high and moderate risks that use would potentially exacerbate. Given the Forest Service proposed new permanent road construction, it is crucial for the agency to demonstrate how it will maintain those roads, as well as BMPs on existing roads, post-project completion even if those roads will be closed after use.

In fact, ML 1 roads still require basic custodial maintenance: "[b]asic custodial maintenance is performed to prevent damage to adjacent resources and to perpetuate the road for future resource management needs." FSH 7709.59 Ch. 63.32. The Forest Service shows that after project completion, there would be 176.2 miles of closed road under each action alternative. DEIS at 69, Table 30. Further, there would be 217.5 in stored status, but only 9.1 miles would be considered impassible. Id. The agency needs to demonstrate how it will protect closed and stored roads from unauthorized access.

As it stands, the Forest Service cites project file H-010 as evidence that earthen berms and legal closures are 95% effective. Yet, the DEIS fails to discuss the project file or show evidence supporting its findings. Upon closer inspection, file #H-010 is a two-page summary of past A19 forest plan monitoring reports through only 2016. It lacks any detail as to how the number of monitoring sites, how they were selected and if they were within or adjacent to the WUI. The latter is an important factor since roads in these areas would be subject to higher levels of use. The project file actually reveals that between 3%-13% of barrier devices were found to be ineffective from 2006 - 2015. Further, a 2004 citizen monitoring project found much higher levels of unauthorized use, with 52.7% representing 135 closure violations. See Case Closed: Public Motorized Trespass and Administrative Activity on Closed Roads in the Upper Swan, Lower Swan, and Noisy Face Geographic Units (Attachment T). The Forest Service asserts that "[s]ince 2011, the average percentage of ineffective closures improved to 5%." Project File H- 010 at 1, but it provides no discussion or evidence to support such a conclusory statement. In fact, the file lacks any details of monitoring efforts since 2015. As such it is arbitrary and capricious for the Forest Service to assert closure devices, including gates and berms, are 95% effective.

Because the Forest Service fails to properly disclose its TAP process in the DEIS or adequately analyze the potential environmental consequences from roads under the action alternatives, we urge the agency to take a closer look at its road system that properly discloses the environmental consequences from the existing road system and how they would change under the action alternatives. Among others, such an analysis would explain the history of the existing road system, including the presence of unauthorized roads and road templates that continue to persist in the project area. It would also specify the types of decommissioning and storage treatments for each road under the action alternatives. The analysis would carefully evaluate the addition of new roads and utilize road densities as an indicator. It would also discuss the agency's history of road maintenance, disclose the number of roads not currently meeting road management objectives and discuss the capacity for future road and road-related BMP maintenance.

At bottom, the Forest Service's proposal to add forest roads to the official road system without demonstrating it can maintain those roads or ensure they do not hinder the agency's ability to protect NFS lands runs contrary to Forest Service policy. See, e.g., 66 Fed. Reg. 3206 (Jan. 12, 2001) ("The intended effect of this final rule is to help ensure that additions to the National Forest System network of roads are those deemed essential for resource management and use; that, construction, reconstruction, and maintenance of roads minimize adverse environmental impacts; and finally that unneeded roads are decommissioned and restoration of ecological processes are initiated"). In the very least, if the Forest Service decides not to identify the minimum road system for this project area, it must provide a rationale for once again failing to comply with its duties under the TMR subpart A, especially in light of the inaccurate explanation the agency offers in its analysis. EIS at 87.

1. Travel Analysis Reports - Systemic Flaws and Erroneous Assumptions

While we support the Forest Service's use of the Travel Analysis Process (TAP) to inform the Mid-Swan DEIS, the methods and assumptions the agency utilized invalidate the report's findings and recommendations, and fail to constitute a science-based analysis required by the TMR subpart A for numerous reasons.

First, the Forest Service appears to have conducted one TAPs for the project area titled "MID- SWAN PROJECT TRANSPORTATION ANALYSIS PROCESS (TAP)," and then changed the process and recommendations in a separate "Mid-Swan TAP Review Version" found in project files R-001 and R-002 respectively. The purpose of the first TAP was to "to explain our comprehensive examination of the transportation network within the Mid-Swan project area, located on the Swan Lake Ranger District of the Flathead National Forest." Project file R-001 at 1. Yet, the Forest Service then produced a second report to "supplement to the Mid-Swan Project Transportation Analysis Process (TAP) paper which outlined a broader evaluation methodology for addressing transportation management." Project File R-002 at 1. The second TAP asserts that the first process was only a partial analysis based on coarse-filter data that was not fully evaluated due to the mid-scale geographic scope of the Mid-Swan planning area, describing the TAP Review Version as a summary of "the process used for the Mid-Swan project at that mid- scale which focused on key issues pertinent to the purpose and need. Id. To be clear, the first TAP follows the steps found in FSH 7709.55 Ch. 20 and actually utilizes fine-filter data sources:

The INFRA database provided the initial spatial road information for the Mid-Swan project analysis area. This was edited to match road locations as visible in the 2016 high resolution aerial photos. Road locations were further refined by using LIDAR bare earth coverage where available, to view road locations where vegetation obscured the road surface.

Project File R-001 at 3.

Further, the first TAP posed 15 questions to assess road benefits and risks specific to the Mid- Swan planning area. Id. at 5. The TAP Review Version did not follow travel analysis direction in the Forest Service Handbook and only considered three benefit criteria and two concern criteria. Project File R-002 at 1-2. The results of this review then became the TAP recommendations. Id. at 8. In other words, it appears the Forest Service arbitrarily revised the first TAP in its "review" without following agency directives, which then became official recommendations for analysis in the Mid-Swan DEIS.

Next, both the TAP and the TAP review limited the scope of analysis and thereby incorporated erroneous assumptions that skewed the results and constrained recommendations. One limit was that the Forest Service did not include all the roads in the planning area stating that the: "[s]cope of analysis will be limited to roads identified for aquatic restoration needs, grizzly bear compliance with 2011 baseline, and those required for project implementation." Project Files R- 001 at 2, R-002 at 1. The omission appears to have resulted in different road miles where the DEIS lists 567 miles of forest roads as the existing condition (DEIS at 69, Table 30), the TAP lists 536.9 miles (Project File R-001 at 3, Table 1), and the TAP Review omits total forest road miles altogether. Further, tables provided in Project File R-010 show the existing road miles at 601.7 miles (Table 1), with the explanation that "[t]his set of roads reviewed in TAP are not entirely within the Mid-Swan planning boundary, adjacent road segments that intersected the planning area are included." It is unclear which, if any, TAP reviewed 601.7 miles of forest road. Regardless, in order to complete a proper TAP the Forest Service should include all system roads in the planning areas, including adjacent road segments, as well as any unauthorized roads it proposes for use or addition to the road system. Rather than include these roads in the TAP, the Forest Service stated that the "[a]nalysis will defer the remainder of roads for on-the-ground implementation. Project File R-001 at 2. Given that subpart A requires minimum road system determinations to be science-based and be completed through a NEPA process, omitting roads until a post-NEPA implementation phase further exemplifies the flaws of condition-based analysis and a failure to comply with both NEPA and the TMR.

Another constraint that skewed the TAP and resulting recommendations was direction that "[a]ll existing open roads, which make up the roads accessible by the public under our Motor Vehicle Use Map, will remain classified as open, per Forest Supervisor direction." Project File R-001 at 5. This essentially limited any TAP recommendations to decommission, store or close roads to only ML 1 roads. Another example of bias that skewed the TAP recommendations was assigning a default "high" benefit to all roads accessing the WUI or the timber base, even if other roads are available to access the same or nearby area. Id. at 4. Further, the Forest Service used 30 years as the temporal scope for road evaluations, double the intended life of the FNF Forest Plan. In this manner, roads with a protected benefit of 20-30 years were assigned a moderate rating, and roads with an anticipated benefit from 15-20 years were given high ratings. The Forest Service cannot look beyond 20 years and determine a road's benefit; a more reasonable timeframe is 10-15 years. Another systematic error with the TAP analysis is where the Forest Service assessed risks within the RMZ, limiting the analysis area to only 150 ft, not 300 ft which would encompass the entire RMZ. Id. at 5. Similarly, the Forest Service did not consider road lengths within 0.25 mi of fish bearing streams, even though this was a measure within the DEIS. It is unclear if these distances were omitted in the TAP Review since the Forest Service did not specify RMZ distances. Project File R-002. The TAP Review criteria are much more nebulous than than in the Mid-Swan TAP assigning a low risk score to "[a] travel route or route section is unlikely to cause harm to wildlife species," without explaining the criteria utilized to make such a determination. Id. Finally, though the scope of the TAP analysis was to "to identify an adequately sized cost-efficient road system," the travel analysis report, TAP Review and even the DEIS all omitted any discussion or analysis regarding the agency's ability to maintain the existing or recommended road system.

Together, these flaws and omissions preclude the agency from relying on the TAP to recommend a minimum road system, or from relying on the analysis to properly inform the Mid-Swan DEIS.

2. Forest Roads, Human Access and Fire

Numerous factors drive instances of wildland fires and typically the Forest Service acknowledges topography, weather and fuel as the primary drivers but that fuels are the only component that can be altered. The agency goes to great lengths attempting to demonstrate how vegetative treatments will change wildland fire behavior as we discussed in comments above. But another factor is human impacts. Human-ignited wildfires account for more than 88% of fires on national lands, and are five times more likely in areas with roads. See Attachment S. Plus, roads can affect where and how forests burn and the vegetative condition of the forest. Yet despite the stated need to establish a future forest resistant to wildland fire, the Forest Service only considered roads as a benefit in the context of fire suppression. Project File R-001, R-002, DEIS at 34. Under Alternative B the Forest Service is proposing to expand the road network through 38.6 miles of new construction, and during the TAP the forest supervisor precluded any open road from being closed or decommissioned. Given the project's purpose is to reduce instances of wildfire, particularly in with WUI, the Forest Service must evaluate the role roads play in causing human-ignitions.

3. Forest Roads and Climate Change

Climate change is a major challenge for natural resource managers because of the magnitude of potential effects and the related uncertainty of those effects. A robust analysis in an EIS of the forest road system and its environmental and social impacts is especially critical in the context of climate change.

Climate change intensifies the impacts associated with roads. For example, as the warming climate alters species distribution and forces wildlife migration, landscape connectivity becomes even more critical to species survival and ecosystem resilience. See Attachment S at 12- 19. Climate change is also expected to lead to more extreme weather events, resulting in increased flood severity, more frequent landslides, altered hydrographs, and changes in erosion and sedimentation rates and delivery processes. Many National Forest roads are poorly

located and designed to be temporarily on the landscape, making them particularly vulnerable to these climate alterations. Even those designed for storms and water flows typical of past decades may fail under future weather scenarios, further exacerbating adverse ecological impacts, public safety concerns, and maintenance needs. At bottom, climate change predictions affect all aspects of road management, including planning and prioritization, operations and maintenance, and design.

More broadly, the Forest Service has a mission to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations. Climate change science identified in Attachment S, Section II demonstrates how climate change places ecosystems on our national forests at risk. Thus to fulfill its mission, the Forest Service must address the risks of climate change when managing road activities on our national forests. Here, the Forest Service must analyze in detail the impact of climate change on forest roads and forest resources. It should start with a vulnerability assessment, to determine the project area's exposure and sensitivity to climate change, as well as its adaptive capacity. For example, the agency should consider the risk of increased disturbance due to climate change when analyzing this proposed project. It should include existing and reasonably foreseeable climate change impacts as part of the affected environment, assess them as part of the agency's hard look at impacts, and integrate them into each of the alternatives, including the no action alternative. The agency should also consider the cumulative impacts likely to result from the proposed project, proposed road activities, and climate change. In planning for climate change impacts and the proposed road activities, the Forest Service should consider: (1) protecting large, intact, natural landscapes and ecological processes; (2) identifying and protecting climate refugia that will provide for climate adaptation; and (3) maintaining and establishing ecological connectivity.

4. Unauthorized Roads

The Forest Service states that in developing the action alternatives "[e]xisting historical road templates were used where possible to minimize new road disturbance. Most of this new construction (77 percent) would occur over previously undisturbed forest soils, but 13 percent could be built over a previously decommissioned road, and 10 percent built over previously disturbed forest (typically over old logging skid trails)." EIS at 66. To be clear, any road that is not a forest road or a temporary road is unauthorized and the fact that remnants of old roads persist on the ground demonstrates the agency's failure to properly remove them, in addition to fully rehabilitating old skid trails and other linear features like fire lines. While we agree the agency should avoid undisturbed forest soils, that is best accomplished by foregoing any new road construction. Furthermore, the fact that the Forest Service was able to determine 13 percent of new road construction would occur on previously decommissioned roads begs the question of how many miles remain in the planning area. The Forest Service must disclose the miles of existing decommissioned road templates and consider their use as new road construction. As it stands, the Forest Service states, "[p]reviously decommissioned road (> 10 years) will be considered new road (vs. Existing road) and allowed if ecological benefit is high." Project File R-002 at 7. The agency must analyze any new road construction as such, regardless of the presence of existing road templates. This is especially true if the road was decommissioned as part of past project mitigation of resource impacts. Since the Forest Service failed to distinguish the legal baseline condition from the existing condition (containing unauthorized roads), or provide the specific resource risks from each unauthorized road proposed for use, the analysis fails to take the requisite hard look required under NEPA.

5. Temporary Roads

Our road concerns extend to the 10.6 miles of temporary road construction under Alternative B, especially in regards to their tracking and removal. The Forest Service explains that "[m]ethods for reclaiming temporary roads are described in appendix A (design criteria INF01)." DEIS at 66. We support treatments that fully recontour temporary and decommissioned roads as the methods direct, but such direction does not absolve the agency from carefully analyzing temporary road construction or use as we detail in our comments above. As it stand, the Forest Service fails to adequately analyze potential effects from temporary roads such as increases in road

densities and wildlife habitat fragmentation, or consider measures to ensure temporary roads do not become unauthorized roads. In fact, given the proposed use of unauthorized roads, it is reasonable to ask the agency to keep track of their location and method of removal, especially where the road prism or other road components may be left on the ground. As we note above, temporary roads may persist on the landscape for up to 10 years, and the agency's analysis fails to fully account for the potential environmental impacts during this time.

Ideally the Forest Service will forego any temporary roads construction. Absent such a decision, the agency needs to include measures that will prevent unauthorized use during the time they remain on the ground, and include in an EIS the potential impacts from unauthorized use of temporary roads. Finally, the Forest Service needs to track temporary roads in its INFRA database or some other fashion to ensure they do not become future road templates that then become part of the national forest road system.

VIII. Consider a reasonable range of alternatives.

NEPA requires the Forest Service to study in detail all "reasonable" alternatives. 42 U.S.C. [sect][sect] 4332(2)(C)(iii) and (E); 40 C.F.R. [sect][sect] 1502.1, 1502.14(a). The discussion of alternatives including the proposed action "is the heart" of the EIS. 40 C.F.R. [sect] 1502.14. Federal agencies must analyze alternatives "in comparative form." *Id.* NEPA requires that the Forest Service "[r]igorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." 40 C.F.R. 1502.14(a). Federal agencies must "[d]evote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits." 40 C.F.R. [sect] 1502.14(b). And agencies must "[i]nclude appropriate mitigation measures not already included in the proposed action or alternatives." *Id.* [sect] 1502.14(f).

Here, the Forest Service considers three alternatives: Alternative A is the no action, Alternative B includes the most amount of activities (118,399 acres for treatment, 38.7 plus 7.5 miles of new roads and 10.6 miles of temporary roads), and Alternative C includes lesser amounts of actions. This does not provide a reasonable range of alternatives, especially considering that both Alternatives B and C propose to build new roads, including new roads within riparian management zones (RMZs).

The Forest Service should consider an alternative with no new road construction, whether system or temporary. Under Alternative C, the agency explains that it will still construct 7.5 miles of road "to create a more efficient road network." It is difficult to understand how adding road miles to an already over-sized and under-funded road system will make it "more efficient." Setting aside this seemingly arbitrary reasoning, the Forest Service should consider an alternative that does not include this additional road construction. Given all of the other stated purposes and needs, an alternative with no new roads would still meet the overarching purpose and need and would be a reasonable alternative.

In the very least, the Forest Service should consider an action alternative that does not propose any new road construction within RMZs. The impact of road construction within RMZs was identified as a key issue. The impacts of this part of the proposal are highly controversial, given best available science showing forest roads have severe negative impacts on water quality. Yet both action alternatives would include road construction within RMZs. Similar reasoning applies to support detailed consideration of a reasonable action alternative that does not include any new roads within eligible wild and scenic river corridors.

The Forest Service should also consider an alternative that restores the landscape by decommissioning logging roads. This alternative would better meet the stated purpose and need to (1) restore and maintain the terrestrial and aquatic biodiversity in light of a changing climate, and (2) reduce fire behavior in the wildland-urban interface ("WUI") and in areas that have influence on fire behavior within the WUI. See DEIS at 5. In light of best available science showing the harmful impacts of forest roads on terrestrial and aquatic biodiversity, and that existing forest roads were not built to withstand changing weather patterns due to climate change, this alternative would

meet the first stated purpose and need. Reducing the road system footprint by decommissioning roads would also reduce harm threatened grizzly bears and bull trout. Plus, data shows that forest roads provide human access to otherwise inaccessible forest landscapes. Given the number of human-caused wildfires in Montana in recent years, this alternative would meet the second stated purpose and need. Failure to consider this reasonable alternative is arbitrary and capricious.

IX. Improper focus on vegetation management in the backcountry, despite the claimed purpose and need to address wildfire risk in the WUI.

Under Alternative B the Forest Service proposes treatment on 79,342 acres outside of the WUI, and 39,058 acres within the WUI. Thus, more than half of the proposed actions are for areas outside of the WUI. The Forest Service justifies its proposal by explaining it "is designed not just for fuels reduction, but also for multiple ecological benefits." DEIS at 38. In explaining the so-called "ecological benefits," however, the Forest Service returns to concerns about fire danger. *Id.* Best available science shows that logging does not stop fires or create forests that are more resilient to wildfire (see *infra*). If the Forest Service is sincere in its claimed purpose and need to protect the WUI, then it must adjust its proposed actions to reflect this focus. Rather than proposing extensive management actions in the backcountry, outside of the WUI, the Forest Service's efforts would be better spent on fire-safe planning within the WUI, adopting smarter policies to protect homes and communities, and addressing climate change.

X. Inconsistent with NFMA.

A. Inconsistent with 2012 Planning Rules

NFMA and its regulations impose both procedural and substantive requirements for Forest Plans. 16 U.S.C. [sect] 16049g(3)(B); 36 C.F.R. [sect][sect] 219.19; 219.20; 219.26. The 2018 Revised Flathead Forest Plan does not comply with the 2012 planning rules, 36 C.F.R. [sect] 219 *et seq.*, including but not limited to the following examples.

For example, the Forest Plan lacks plan components to provide the ecological conditions necessary to recover species listed under the federal ESA and to conserve species proposed for listing, including grizzly bears, Canada lynx and its critical habitat, bull trout and its critical habitat, and the plant species water howellia. The 2012 planning rules require a Forest Plan "provide for the diversity of plant and animal communities." 36 C.F.R. [sect] 219.9. The Forest Plan must include plan components "including standards or guidelines, to maintain or restore the ecological integrity of terrestrial and aquatic ecosystems and watersheds in the plan area, including plan components to maintain or restore their structure, function, composition, and connectivity." *Id.* [sect] 219.9(a)(1). Best available science shows that forest roads have numerous negative impacts on grizzly bears, bull trout, and Canada lynx, and can adversely impact water quality (see *infra*).

Yet under this project the Forest Service proposes to add 7.5 miles of new forest roads (plus an additional 31 miles of new roads under Alternative B) to the project area's 567-mile existing road system, and decommission only 44.1 miles. DEIS at xii. The proposal includes logging and new forest road construction within RMZs. DEIS at 115. The Forest Service also proposes new forest road construction within grizzly bear secure core habitat.

Based on what information is available, for Alternative B the Forest Service states that "[p]ermanent road construction could occur on 38.7 miles (note: this does not include the 7.5 miles of new road construction proposed above) and temporary roads on another 10.6 miles. Seventy-seven percent of these permanent roads would be stored after use, the remaining would be closed with a gate." DEIS at xiv. Elsewhere, the Forest Service states that 31.1 miles of permanent road construction could occur under Alternative B. DEIS at 66, Table 28. The Forest Service has a duty to present accurate information that allows for meaningful comment, and this discrepancy is confusing. Assuming the lesser amount is accurate, this still means an increase of 31.1 miles of

permanent new roads on the system.

The Forest Service apparently interprets Forest Plan standards FW-STD-IFS-01, FW-STD-IFS- 02, FW-STD-IFS-03, and FW-STD-WL-03 as allowing for the construction of new forest roads within grizzly bear secure core habitat, as proposed under the Mid-Swan Project. This is a major change from the previous Forest Plan, under which objectives and standards from Amendment 19 had proven beneficial to wildlife including grizzly bears. By eliminating Amendment 19 objectives and standards in the 2018 Forest Plan, the Forest Service rescinded its earlier commitment to decommission 518 miles of roads. The 2018 Forest Plan proposes to decommission only 30-60 miles of roads over the life of the plan, an abysmal reduction. And, based on this Mid-Swan Project, it is clear the Forest Plan intends to build new forest roads. By facilitating construction of new forest roads within crucial grizzly bear habitat, the Forest Plan lacks standards and guidelines to maintain or restore the ecological integrity of terrestrial ecosystems on the forest, including plan components that maintain or restore structure, function, composition, and connectivity to contribute to the recovery of grizzly bears in violation of the 2012 planning rules. The Forest Plan also lacks standards or guidelines to provide for connectivity of grizzly populations, especially between the NCDE and Greater Yellowstone Ecosystem to the South of the Flathead.

Guideline FW-GDL-IFS-04[mdash]which does not require removal of culverts from forest roads even when decommissioned, attempting to make them impassable, or storing them[mdash]combined with the weaker culvert monitoring program that reduces requirements to once every six years as opposed to annually under the Flathead's Forest Plan puts water quality and bull trout and bull trout critical habitat at risk in violation of the 2012 planning rules. By allowing the addition of new forest roads within RMZs, the Forest Plan lacks standards and guidelines to maintain or restore the ecological integrity of terrestrial ecosystems on the forest, including plan components that maintain or restore structure, function, composition, and connectivity to contribute to the recovery of bull trout in violation of the 2012 planning rules.

As another example, the monitoring under the 2018 Forest Plan is inadequate to ensure standards and guidelines are adhered to. A forest plan must include a monitoring program that enables the responsible official to determine if a change in plan components or other plan content that guide management of resources on the plan area may be needed. Id. [sect] 219.12(a)(1). The monitoring program must include monitoring questions and associated indicators "designed to inform the management of resources on the plan area, including by testing relevant assumptions, tracking relevant changes, and measuring management effectiveness and progress toward achieving or maintaining the plan's desired conditions or objectives." Id. [sect] 219.12(a)(2). The monitoring program must contain one or more monitoring questions and associated indicators addressing, inter alia, the "status of a select set of the ecological conditions required under [sect] 219.9 to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern." Id. [sect] 219.12(a)(4)(iv).

Here, the Flathead Forest Plan monitoring program lacks questions and associated indicators to test relevant assumptions, track relevant changes, or measure management effectiveness and progress toward achieving or maintaining the ecological conditions required under [sect] 219.9 to contribute to the recovery of the grizzly bear. In particular, MON-IFS-01 related to road closure efficacy is inadequate to ensure compliance on a site-specific level. It requires the agency to report every other year the number and percentage of road closure devices checked and percentages determined to be effective at restricting public motorized use. By giving the Forest Service complete discretion to determine how many road closure devices to check, and asking subjectively whether the agency thinks those closures have been effective, fails to ensure compliance with Desired Condition FW-DC-IFS-12 ("Road closure devices are maintained so that they are effective").

Specific to the infrastructure components affecting grizzly bear habitat, the monitoring components are insufficient to enable the responsible official to determine if a change in plan components or other plan content that guide management of resources on the plan area may be needed. 2018 Flathead Forest Plan at 158-159 (MON-NCDE-01 (OMRD, TMRD, secure core for each grizzly bear subunit in the PCA); MON-NCDE-05 (percent

change in 10-year running average of OMRD, TMRD, secure core for each GBSU with temporary increases in projects); MON-NCDE-06 (number of years to complete a project for each GBSU in the PCA)). These monitoring metrics are reported only every other year. The OMRD, TMRD, and secure core calculations are based on estimated annual numbers, and then calculated based on a 10-year running average to determine if the percent increase above OMRD, TMRD, or below secure core is exceeded. None of the standards require, and none of the monitoring metrics track, whether the numbers return to previous levels to ensure the projects and changes in OMRD, TMRD, and secure core are indeed temporary.

B. Inconsistent with 2018 Flathead Forest Plan

Under the National Forest Management Act (NFMA), specific projects like this must be consistent with the governing forest plan. 16 U.S.C. [sect] 1604(i); 36 C.F.R. [sect] 219.15. A project or activity must be consistent with all applicable plan components, including the desired conditions, standards, and guidelines. See *All. for the Wild Rockies v. United States Forest Serv.*, 907 F.3d 1105, 1110 (9th Cir. 2018). Here, the Forest Service must demonstrate how the proposed actions are consistent with the 2018 Flathead Forest Plan. Specifically, the Forest Service must explain how this project will meet the grizzly bear road management standards, including road density calculations. Our concerns that the Forest Service has failed to demonstrate compliance with the Flathead Forest Plan include, but are not limited to, the following.

Wildlife Plan Components

The agency must explain how the proposed actions will maintain or restore the structure, function, composition, and connectivity to contribute to the recovery of the NCDE grizzly bear population and Canada lynx. It should explain how its proposal, including the plans to build new system roads, construct temporary roads, reopen or reconstruct roads, and authorize log hauling on numerous forest roads, will contribute to the recovery of grizzly bear, Canada lynx, and bull trout. The Forest Service should also explain how its proposal will conserve wolverine.

Grizzly Bear Components

This project will cover all or part of nine grizzly bear subunits (GBSUs) (Cold Jim, Goat Creek, Hemlock Elk, Lion Creek, Meadow Smith, Piper Creek, Porcupine Woodward, South Fork/Lost Soup, and Swan Lake). DEIS at 246. All of these are within the Northern Continental Divide Ecosystem ("NCDE") Primary Conservation Area. Id.

Throughout its analysis, the Forest Service points to Appendix A design criteria and strategies to ensure timing restrictions for the proposed actions are consistent with Forest Plan direction. See, e.g., DEIS at 35. As a result of deferring compliance with that direction until after the decision is signed, and specific actions are identified for implementation, the Forest Service fails to demonstrate how the project will comply with the Forest Plan.

The Forest Service points to Appendix A design criteria and strategies to ensure temporal and spatial restrictions for the proposed actions are consistent with Forest Plan direction. DEIS at 35,

248. In particular, for grizzly bears the Forest Service points to the implementation schedule and implementation guide in Appendix A to "provide guidance on how to protect key grizzly bear resources and effectively disperse treatment effects in space and time." DEIS at 246. The design criteria and strategies in Appendix A are inadequate to ensure treatments are properly dispersed in space and time consistently with the Forest Plan standards and guidelines.

Even assuming the Forest Plan direction were sufficient to protect grizzly bears, the Forest Service's reliance on Appendix A is insufficient to demonstrate compliance with those Forest Plan components. Appendix A does not explain which design criteria will apply to which particular timber projects. It does not identify when specific

treatments will occur over the course of the 15-year project authorization, precluding the public from understanding how treatment units might relate in space and time. See DEIS at 248 (stating that "timing and spatial distribution of projects within the 15-year implementation timeframe will be guided by a combination of implementation strategies and design criteria"). Because that information will be determined at some future point during implementation, it is not available during this NEPA process. Without this information, it is impossible to determine how the Forest Service will ensure compliance with the Forest Plan.

The Forest Service fails to demonstrate how the project will comply with Forest Plan components relevant to road building and protection of grizzly bears, including but not limited to the following Forest Plan components.

FW-GDL-IFS-01

Under Guideline FW-GDL-IFS-01, in each GBSU within the NDCE PCA, each project should be designed so that on-the-ground implementation does not exceed 5 years. 2018 Flathead Forest Plan at 66. The 2018 Forest Plan defines "project (in grizzly bear habitat in the [NCDE])" as "any temporary activity requiring construction of new roads, temporary roads, reconstruction or opening of restricted roads during the non-denning season." 2018 Flathead Forest Plan at 195. The Mid-Swan Project is a "project" that proposes activity requiring construction of new roads, temporary roads, reconstruction or opening of restricted roads during the non-denning season for grizzly bear habitat within nine GBSUs within the NCDE PCA for 15 years.

This project does not fit any of the identified exceptions in the Guideline. 2018 Flathead Forest Plan at 66 (listing "actions where existing rights preclude or constrain agency discretion (e.g., certain contracts, permits, leases); prescribed burning (including slash disposal), best management practices to protect water quality, or required reforestation activities; or emergency situations as defined by 36 CFR [sect] 218.21."). The Guideline notes that if an extension to the five- year limit is required, the reasons should be documented in writing prior to authorization but here an extension would be improper because the project itself is proposed for 15 years.

The 5-year project limit is not merely a Guideline under the Forest Plan, but required because it is incorporated into the terms and conditions of the relevant Biological Opinion. See 2017 Biological Opinion for the 2018 Revised Forest Plan, page III-63 (noting the 5-year requirement limits "the amount and duration of the disturbance so that bears are not permanently displaced by human activities"). To the extent the Forest Service claims each timber management unit will be designed to meet the 5-year limit, this ignores the plain and explicit language of the Guideline, which places limits on "projects"[mdash]not implementation of timber units (or as the Forest Service calls it, "project activities") within a longer project. See also 2018 Flathead Forest Plan at 159 (listing MON-NCDE-06, which requires reporting on the "[n]umber of years to complete a project" for each GBSU in the PCA). By proposing this Mid-Swan project for 15 years the Forest Service proposes a project that blatantly violates its own Forest Plan.

In attempting to avoid the Guideline, the Forest Service's analysis confuses activities that will be implemented under this decision, with this decision which is itself a project-level decision. See DEIS at 253 (stating under Alternative B "project activities would be scheduled to accommodate both Flathead Forest Plan Guideline FW-GDL-IFS-01 and the USFWS Biological Opinion for the Flathead Forest Plan" via the "proposed implementation schedule . . . described in Table 166"). The Forest Service appears to reason that because "project activity" within a GBSU will be less than 5 years of implementation, it shouldn't matter that the Mid-Swan Project itself is more than 5 years. Even assuming each project activity could be itself a distinct project (which should, therefore, have its own site-specific NEPA analysis and decision), the implementation schedule in Table 166 does not help because it lacks necessary details to demonstrate compliance with the Guideline.

Within two of the GBSUs (Meadow Smith and Cold Jim) the Forest Service propose activities for 5 years and then 4 years, with only 1 year of rest inbetween. Guideline FW-GDL-IFS-02 states that the conditions should be restored to pre-project levels within one year after completion. 2018 Flathead Forest Plan at 66. With only one

year before the next project starts, this means that on-the-ground activities in these GBSUs will continue for up to nine years. Because these activities would be under a single project authorization, this violates the Guideline FW-GDL-IFS-01.

FW-STD-IFS-02

In addition, for projects within a GBSU within the primary conservation area, Standard FW- STD-IFS-02 requires no net decrease to baseline for secure core and no net increase to baseline for OMRD or TMRD on forest system lands during the non-denning season. See 2018 Flathead Forest Plan at 65. This standard includes various exceptions. Id. (including, for example, temporary use of a motorized route for a project (see "project in grizzly bear habitat in the NCDE" definition in the glossary and FW-STD-IFS-03)). It is impossible for the Forest Service to demonstrate compliance with this standard in the DEIS without more detailed information about the timing and location of unit implementation and the new road construction proposed to facilitate activities. For example, the Forest Service claims it will comply with secure core requirements because "new road construction is offset by road closures and decommissioning" such that the percentage of secure core in nine GBSUs increases, and in the remaining six the percentage remains constant. DEIS at 250. Yet the Forest Service ignores the timing of road construction, decommissioning, and closure, as well as the location of these activities. Without such details, the information provided in the DEIS fails to provide any support for the agency's conclusory statements that its actions will comply with the plan components.

Even assuming the Forest Service could demonstrate that the timing and location of road construction, decommissioning, and closure were close enough within the 15-year project timeline and within the large, 174,000 acre project area, the agency's reliance on "offsets" is unfounded.

In particular, the Forest Service cannot "offset" these new roads simply by storing existing roads. See Sept. 9, 2020 email from Joseph Krueger, Forest Service, to Keith Hammer (Attachment U). Stored roads remain part of the road system, and have not been rendered impassable, and therefore still must be included in total motorized route density calculations. It is arbitrary and capricious to claim that "[n]ew roads will only affect TMRD if they cause an area to go from below 2 miles/sq mile to above 2 miles/sq mile" and this change "can't be mitigated somehow by closing another road segment." Id. The Forest Service's interpretation of its Forest Plan components would render the standards essentially meaningless, fails to ensure grizzly bears are protected, and runs contrary to its own justification for the Forest Plan components (that they would maintain 2011 baseline levels of TMRD). Further fragmenting forest habitat in the already highly fragmented Swan Valley is not "landscape restoration."

In addition, closing roads with a gate is insufficient to offset new road construction. The Forest Service claims 75% of the roads used in this project will be closed with a gate following project implementation. Best available science shows that gates are ineffective to address the impacts from roads to grizzly bears.

FW-STD-IFS-03

Standard FW-STD-IFS-03 allows for "temporary changes" to OMRD, TMRD, and secure core for "projects" based on a 10-year running average. See 2018 Flathead Forest Plan at 65-66 ("In each bear management subunit within the NCDE primary conservation area, temporary changes in the open motorized route density, total motorized route density, and secure core shall be allowed for projects (as defined by "project (in grizzly bear habitat in the NCDE) in the glossary). The 10-year running average for open motorized route density, total motorized route density, and secure core numbers shall not exceed the following limits per bear management subunit: 5 percent temporary increase in open motorized route density in each subunit (i.e., open motorized route density baseline plus 5 percent); 3 percent temporary increase in total motorized route density in each subunit (i.e., total motorized route density baseline plus 3 percent); and 2 percent temporary decrease in secure core in each subunit (i.e., secure core baseline minus 2 percent).").

The Forest Plan states that to implement FW-STD-IFS-03, the agency should include calculations of the annual estimated changes in OMRD, TMRD, and secure core for the anticipated duration of the project in NEPA analyses of projects. 2018 Flathead Forest Plan, Appendix C at C-68 (directing the agency to "Incorporate the calculations for all projects under analysis in a grizzly bear subunit into the 10-year running average. Standard FW-STD-IFS-03 must be met, but there is some project-specific flexibility in how it is met."). The Forest Service fails to provide those calculations in the NEPA analysis in violation of the Standard. The Forest Service points to the Appendix A decision tree as guiding implementation of projects requiring motorized access. DEIS at 248. But the decision tree merely parrots the requirements in the Forest Plan. DEIS, Appendix A at A-39. It does not demonstrate how the Forest Service will implement its proposed activities to comply with those requirements. This is important, because understanding how the Forest Service interprets these requirements to regulate (or not) certain activities is key to understanding the impacts of the action and whether or not the actions comply with the Forest Plan.

FW-STD-WL-03

Similarly, Standard FW-STD-WL-03 requires monitoring based on annual estimated calculations of temporary changes in OMRD, TMRD, and secure core for each GBSU within the NCDE primary conservation area. See 2018 Flathead Forest Plan at 50 ("In each bear management subunit within the NCDE primary conservation area, temporary changes in the open motorized route density, total motorized route density, and secure core shall be calculated for roads used for projects (as defined by "project (in grizzly bear habitat in the NCDE)" during the non-denning season (see glossary). Calculations will include estimated changes for each year of the anticipated duration of the project and shall be incorporated into the 10-year running average required by standard FW-STD-IFS-03."). The Forest Plan anticipates measuring changes in OMRD, TMRD, and secure core based on annual estimates to come up with a 10-year running average. But because the Mid-Swan Project is proposed for 15 years, and fails to disclose the details of where proposed new roads will be built and when, it is impossible for the public to determine or the Forest Service to demonstrate compliance with this standard.

FW-STD-IFS-04

Under Standard FW-STD-IFS-04, "a restricted road may be temporarily opened for public motorized use to allow authorized uses" for less than 30 consecutive days, but "temporary public use of a restricted road shall not be authorized in secure core." 2018 Flathead Forest Plan at 66. Because the Mid-Swan Project is within secure core, under this Standard none of the restricted roads should be allowed to be temporarily opened for public motorized use.

2017 Biological Opinion Terms and Conditions

The Forest Service also must demonstrate compliance with the terms and conditions of the 2017 Biological Opinion for the 2018 Forest Plan. This includes spatial and temporal requirements for activities within GBSUs. Without more detailed information regarding the timing and location of implementation of the proposed activities, it is impossible to understand or determine whether this Mid-Swan Project will comply with the terms and conditions limiting the spatial and temporal impacts of projects within the NCDE PCA.

Riparian Management Zone Components

Prescribed fire and hand thinning are proposed within the inner RMZs (IRMZ) and a variety of forestry practices and prescribed fire proposed within the outer RMZs (ORMZ). DEIS at 36. Alternative B was modified to incorporate a maximum treatment threshold for IRMZ treatments, by implementation unit, based on historical fire frequencies, which reduced the potential treatment acres. DEIS at 36. A secondary project-wide maximum treatment threshold is also established for the extent of protecting the Mid-Swan project area aquatic ecosystem

from cumulative fire effects. DEIS at 36. An additional 800 acres of RMZ would be directly affected by the construction of new roads which pass through the RMZ network. DEIS at 36.

The Forest Service states that vegetation conditions, flood prone area, and design criteria (i.e., PLT02, AQ06, AQ13, AQ14) will provide sideboards for treatments in riparian management zones (both inner and outer). DEIS at 114-115. By not delineating when, where, and how the Forest Service will comply with these requirements, the agency fails to demonstrate compliance with the Forest Plan.

Canada Lynx Components

The Forest Service must demonstrate how the project will comply with Standard FW-STD-WL- 04, which requires the agency to apply the Northern Rockies Lynx Management Direction (NRLMD). 2018 Flathead Forest Plan at 50.

Water Howellia Components

The Forest Plan requires that land management activities within a 300-foot zone surrounding support the long-term persistence of the species. Under Desired Condition FW-DC-PLANT-02, the Forest Service is directed to "create a favorable physical environment that protects against hydrological changes that may adversely impact" water howellia. 2018 Flathead Forest Plan at 45. Guideline FW-GDL-PLANT-01 allows ground-disturbing vegetation treatments within a 300-foot buffer surrounding occupied and unoccupied water howellia ponds "only if the vegetative, physical, and/or hydrological features required for long-term habitat conservation are maintained or improved." 2018 Flathead Forest Plan at 45-46. Guideline FW-GDL-PLANT-02 allows for road maintenance within the 300-foot buffer to maintain or improve hydrological integrity, and Guideline FW-GDL-PLANT-03 directs water drafting for invasive plant control or fire management not to occur. 2018 Flathead Forest Plan at 46.

Within the project area, 88 ephemeral ponds on forest system lands are known to be occupied by water howellia, and an additional 73 ponds are potential habitat but unoccupied. DEIS at 104. Under Alternative B, the Forest Service proposes treatments within the management zones of up to 144 water howellia ponds (77 of which are occupied, 67 unoccupied). DEIS at 121. It proposes to leave alone only 13 (11 occupied, 2 unoccupied). Id. at 122. The Forest Service explains that impacts from treatments to water howellia will be limited by design criteria (PLT01-PLT07). It relies on the same design criteria to demonstrate compliance with the Forest Plan. Yet because the numerous and various design criteria are simply potential sideboards, the precise nature of which will be determined only after a final decision is made, reliance on design criteria is insufficient to demonstrate compliance with the Forest Plan.

The Forest Service bases its claimed need for treatment within the buffer zone of water howellia on the unsupported assumptions about wildfire risk and logging, addressed above. See, e.g., DEIS at 104. Namely, the Forest Service claims treatment is needed to reduce the risk of stand- replacing fire. Yet it notes in its analysis of Alternative B effects that the Pipp (2017) study "did not find evidence that persistence of water howellia has been limited by the disturbance levels found between 1978 and 2014" despite "high severity fire" during the same time period. DEIS at 122. Just as best available science undercuts the Forest Service's assumptions that logging reduces wildfire risk, best available science does not support the Forest Service's conclusions regarding the effects of proposed treatments within the buffer zone, and does not support the need for treatments within the buffer zone for water howellia. The agency mentions, but does not explain how, "potential effects may be compounded by the effects of climate change." DEIS at

105. The Forest Service's effects analysis is arbitrary and capricious, unsupported by best evidence, and fails to demonstrate how the proposed actions will comply with the Forest Plan.

Old Growth Components

Forest Plan Desired Conditions FW-DC-TE&V-12, FW-DC-TE&V-14 directs the Forest Service to maintain or increase the density and distribution of very large live trees across the landscape, as well as connectivity among old-growth forests. 2018 Flathead Forest Plan at 31-32. Forest Plan Standards and Guidelines require that treatment in old growth maintain old growth character. See, e.g., id. at 41 (FW-STD-TE&V-01, "In old-growth forest, vegetation management activities must not modify the characteristics of the stand to the extent that stand density (basal area) and trees per acre above a specific size and age class are reduced to below the minimum criteria in Green et al.").

Under Alternative B the Forest Service proposes to cut old growth in order to save it from stand replacing wildfires. Setting aside the flawed assumptions and ill-advised nature of this approach (addressed *infra*), the Forest Service supports its proposal despite admitting that it lacks any updated map of old growth stands in the project area. Instead, it points to Appendix A for (1) a process for identifying old growth prior to implementation, and (2) design criteria for defining what treatments are allowed. See, e.g., DEIS at 38. The Forest Service states it will ensure Forest Plan compliance based on "surveys [that] would determine the presence of old growth prior to implementation of any vegetation treatments." DEIS at 112. The Forest Service fails to demonstrate compliance with NFMA by deferring the details about how it will comply with Forest Plan standards and guidelines until after its decision is made.

C. Improper project-level Forest Plan amendments

The Forest Service proposes two project-specific amendments to the 2018 Forest Plan for lynx habitat that would allow it to increase forest management in lynx habitat outside of the WUI. The Forest Service has discretion to determine whether and how to amend the Forest Plan and to determine the scope and scale of any amendment. See DEIS at 87 (citing 36 C.F.R. [sect] 219.13(a)). Under 36 C.F.R. 219.15(c)(4) the Forest Service may amend a Forest Plan contemporaneously with the approval of a project or activity so that the project or activity will be consistent with the plan as amended, and notes that an amendment may be limited to apply only to the project or activity. The Forest Service must base its amendment on a preliminary identification of the need to change the plan, which may be based on a new assessment, a monitoring report, or other documentation of new information, changed conditions, or changed circumstances. 36 C.F.R. [sect] 219.13(b)(1).

Here, the Forest Service claims the project-specific amendments are tailored to the specific ecological conditions of the Mid-Swan landscape and that an amendment to plan direction across the NRLMD planning area is beyond the scope of the project. DEIS at 87. However, the amendments are inappropriate as project-specific amendments. This is especially true to the extent that the Forest Service claims the change is needed to account for more recent science. Nothing about that justification is specific to this project, but rather based on new science related to lynx and lynx habitat needs. Instead, the Forest Service should account for new science via an amendment to the NRLMD itself.

The Forest Service conditions any details of where or how the project-specific amendments will apply to future consultation with the Fish and Wildlife Service. DEIS at 233. Without this information, we are unable to meaningfully comment about whether a project-level amendment is appropriate in this instance. Given the information available, it appears that it is not.

The Forest Service proposes to amend two Forest Plan standards. First, it proposes to amend NRLMD Standard VEG S5. NRLMD Standard VEG S5 states, "precommercial thinning projects that reduce snowshoe hare habitat may occur from the stand initiation structural stage until the stand no longer provides winter snowshoe hare habitat only . . . [w]ithin 200 feet of administrative sites, dwellings, or outbuildings; or . . . [f]or research studies . . . ; or . . . [b]ased on new information that is peer-reviewed and accepted by the regional level of the Forest Service . . . ; or . . . [f]or conifer removal in aspen, . . . ; or . . . [t]o restore whitebark pine." 2018 Flathead Forest Plan at A-6. The standard generally does not apply to treatments within the WUI.

The Forest Service proposes to amend this standard to allow vegetation management in stand initiation snowshoe hare habitat when existing levels of stand initiation snowshoe hare habitat exceed recommended levels and the habitat mosaic does not meet the recommendations of recent research regarding current and future lynx habitat functionality. There are two problems with this proposal.

First, as noted above, the Forest Service claims the amendment is needed based on recent research. The Standard itself includes an exception for this situation, but apparently the science the Forest Service relies on here is not peer-reviewed or accepted by the regional level of the Forest Service as required under Standard VEG S5.

Second, the Forest Service's proposed amendment creates an enormous amount of discretion for the agency, essentially nullifying the original standard (requiring new information be peer reviewed and accepted by the Forest Service's regional office), without adequate justification. The Forest Service claims that activities carried out under the VEG S5 amendment would be limited to areas outside of the WUI where management action has the potential to improve lynx habitat functionality. But that is precisely the purpose and intent of VEG S5: to limit precommercial thinning outside of WUIs to where management action has the potential to improve lynx habitat functionality, based on peer reviewed science and as accepted by the Forest Service Regional Office. Instead, the Forest Service assumes that its actions have the potential to improve lynx habitat functionality without providing support for that assumption much less attempting to demonstrate this new science is best available science. Thus, the amendment lacks any basis other than the Forest Service does not wish to comply with the NRLMD standard that is grounded in best available science, and which has been vetted through ESA consultation.

The second project-specific amendment the Forest Service proposes is to NRLMD Standard VEG S6, which states, "vegetation management projects that reduce snowshoe hare habitat in multi-story mature or late successional forests" may occur only within 200 feet of administrative sites, for research studies, for incidental removal during salvage harvest, or for noncommercial felling of trees larger than sapling size within 200 feet of whitebark pine. 2018 Flathead Forest Plan at A-6 - A-7. It generally applies both within and outside of the WUI, except for HFRA fuel treatment projects within the WUI. The Forest Service proposes to allow vegetation management in mature multistory snowshoe hare habitat to restore natural forest patterns and ecological processes. Again, the Forest Service bases its proposal on an assumption that active management will indeed promote stand resiliency and functionality.

Ultimately, neither of the proposed amendments are appropriate as project-level amendments, and the Forest Service fails to provide sufficient justification for the proposed amendments.

XI. Failure to demonstrate compliance with the ESA.

The Forest Service must ensure that its actions comply with the Endangered Species Act (ESA). The project area on the Flathead National Forest provides habitat for species listed under the ESA, including threatened grizzly bear, threatened Canada lynx and its critical habitat, threatened bull trout and its designated critical habitat, and the plant species threatened water howellia. Section 7 of the ESA imposes a substantive obligation on federal agencies to "insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of" habitat that has been designated as critical for the species. 16 U.S.C. [sect] 1536(a)(2). As noted in the NFMA section above, the Forest Service also must demonstrate how this project will comply with the terms and conditions from the 2017 Biological Opinion for the 2018 Flathead Forest Plan. The Forest Service fails to demonstrate how its proposed actions will comply with the ESA.

One major confounding factor is the lack of sufficient detailed information to meaningfully understand the impacts

of the proposed action. See, e.g., DEIS at 43 (explaining that "detailed treatment prescriptions would be determined prior to any vegetation management actions by field-reviewing existing vegetation conditions and identifying any resource concerns"). Not only is it difficult to understand what exactly is being proposed, but information about the baseline conditions is being withheld until after the Forest Service signs off on its decision. This not only violates NEPA, but prevents a full and informed analysis under the ESA. The inability to determine what exactly the Forest Service seeks to authorize and how those activities might impact ESA listed species highlights the absurdity of this vague, programmatic-style DEIS to authorize specific[mdash]but as yet undefined[mdash]activities. As a result of deferring compliance with that direction until after the decision is signed, and specific actions are identified for implementation, the Forest Service fails to demonstrate how the project will comply with the ESA.

A. Grizzly Bear

The Forest Service recognizes that road densities and associated human activities have been identified as one of the primary causes of grizzly bear mortality and displacement. DEIS at 248. And that the use of closed roads during project implementation, and the creation of temporary roads, to support project implementation, may pose a risk to resident grizzly bears. Id. Yet the Forest Service ignores best available science and relevant factors in attempting to downplay impacts from this project to grizzly bear. See, e.g., DEIS at 249 ("Based on grizzly tracks and remote camera detections, the district biologist has frequently observed grizzly bears using restricted (gated or bermed) roads for travel suggesting that displacement is not occurring as a result of restricted-use roads (project file exhibit H-013)"); id. at 250 ("In the Mid Swan project area, grizzly use of the landscape is widespread across the low to middle elevation regions, regardless of road densities and development (Ruby 2014)").

The Forest Service fails to consider impacts to grizzly bear population as a whole, not just the NCDE. See DEIS at 249-250 (deferring its analysis to the Conservation Strategy for the NCDE and the FEIS for the Forest Plan). To the extent the Forest Service relies on the Conservation Strategy for the NCDE to supplement or support its analysis here, that reliance is misplaced because the Conservation Strategy never went through a NEPA process. Reliance is therefore improper tiering. To the extent the Forest Service relies on the FEIS for the Forest Plan, that reliance is misplaced because those documents are extremely flawed[mdash]especially as related to impacts from roads and vegetation projects to grizzly bears and bull trout. Current litigation challenges the reasoning, lack of science, assumptions, and conclusions from those documents. See *WildEarth Guardians v. Steele*, Case 9:19-cv-00056-DWM. Neither the Conservation Strategy nor the FEIS for the Forest Plan considered impacts to the grizzly bear population as a whole, and the Forest Service again fails to do so in this DEIS for the Mid-Swan project. Instead, all of these documents focused on the NCDE population alone.

The Forest Service acknowledges this project will result in loss of cover, decrease in security, and displacement to grizzly bears. DEIS at 250. But as explained throughout this comment letter, the project lacks site-specific information necessary to demonstrate compliance with the Forest Plan components regarding forest roads and timber projects in grizzly bear core habitat. This lack of information is also fatal to the agency's attempts to demonstrate compliance with the ESA. Plus, the Forest Service fails to consider relevant factors, including but not limited to increases in grizzly bear deaths within the NCDE in recent years and the importance of connectivity between the NCDE and other grizzly bear recovery units.

B. Canada lynx and its designated critical habitat

Canada lynx are listed as threatened under the ESA. Threats to lynx include present or threatened destruction, modification, or curtailment of its habitat, including threats from timber harvest, fire suppression, and conversion of forest lands to agriculture. These threats remove lynx habitat and also isolate habitat into small, fragmented patches. Lynx movements may be negatively influenced by high traffic volume on roads bisecting suitable lynx habitat. Lynx are also threatened by climate change and the isolated nature of their populations. In 2014, FWS issued a revised rule designating critical habitat for lynx in the contiguous United States, including lands within

the project area, that is essential to the conservation of the species.

ESA protections apply to lynx wherever they are found, not just in LAUs. 79 Fed. Reg. 54782 (Sept. 12, 2014) ("This rule revises critical habitat for the lynx and extends the Endangered Species Act's protections to the species wherever it occurs in the contiguous United States"). The Forest Service must disclose how this project area relates to designated critical habitat for lynx. 79 Fed. Reg. 54782, 54844 (Sept. 12, 2014) (Critical Habitat for Canada Lynx Unit 3 - Northern Rockies).

The Forest Service must demonstrate how the project addresses and complies with the NRLMD, including in the context of climate change, proposed logging, road construction, and resulting habitat fragmentation. Because the project lacks site-specific information about the location, nature, and timing of the proposed actions, the Forest Service fails to demonstrate compliance with the ESA.

C. Bull trout and its designated critical habitat

Bull trout (*Salvelinus confluentus*) was listed as threatened under the ESA throughout the coterminous United States in 1999. Bull trout are a cold-water fish of relatively pristine streams and lakes. They have specific habitat requirements: cold, clean, complex and connected habitat. Primary threats to bull trout include habitat degradation and fragmentation, blockage of migratory corridors, poor water quality, past fisheries management, and the introduction of non- native species such as brown, lake, and brook trout. Effects resulting from climate change also threaten bull trout, because a warming climate is expected to shrink cool spawning and rearing areas. Bull trout occur over a large area, but their distribution and abundance has declined and scientists have documented several local extinctions. Remaining populations tend to be small and isolated from each other, making the species more susceptible to local extinctions.

Bull trout and designated bull trout critical habitat exist within the Mid-Swan Project area on the Flathead National Forest within Unit 31 that was designated in 2010, 75 Fed. Reg. at 64,067. The Forest Service notes that it is likely that bull trout would be adversely affected by the project. DEIS at 155.

In addition to impacts from logging such as increased sediment runoff into receiving waters, roads often contribute to degraded baseline conditions in watersheds containing bull trout (see additional information regarding impacts of roads, including negative impacts to water quality, *infra*). Roads are a primary source of sediment impacts to developed watersheds. Accumulation of fine sediment is detrimental to bull trout habitat. Lee et al. (1997) found a pattern of decreasing strong populations of bull trout with increasing road density. Sediment delivered to streams is greatest in riparian areas where roads cross the streams. Fords and approaches to the crossings deliver sediment directly to streams. Roads and trails paralleling streams can interfere with large wood reaching the stream and cause increased erosion and decreased stream bank condition.

Culverts can deliver large amount of sediment to receiving waters when the culvert plugs and fails. The Forest Service and FWS have identified addressing the existing road system on the Flathead as the key opportunity to conserve bull trout. The agencies recognized that harms to bull trout from un-maintained forest roads and culverts behind gates and berms are legitimate concerns, and allowing culverts to remain increases the risk of losing a fish population and degrading water quality, as shown in the literature.

FWS's 2015 Biological Opinion on the effects to bull trout and bull trout critical habitat from road-related activities in Western Montana states:

Culverts that remain in the road behind gates and berms that are not properly sized, positioned, and inspected . . . have an increased risk for failure by reducing awareness of potential maintenance needs. The accumulation of debris has the potential to obstruct culverts and other road drainage structures. Without maintenance and periodic cleaning, these structures can fail, resulting in sediment production from the road surface, ditch, and fill

slopes. The design criteria to address drainage structures left behind gates and berms require annual monitoring of these structures.

See U.S. Fish and Wildlife Service Montana Ecological Services Office, Biological Opinion on the Effects to Bull Trout and Bull Trout Critical Habitat From the Implementation of Proposed Actions Associated with Road-related Activities that May Affect Bull Trout and Bull Trout Critical Habitat in Western Montana (April 15, 2015), pages 45-46.

In 2006, the Forest Service and FWS affirmed that high-risk culverts (or "pipes") left behind berms and gates on forest roads was the primary issue affecting bull trout habitat on the Flathead National Forest. See Meeting notes Seeley Lake 11/30/06 T&C Reporting. Many forest roads and culverts proposed under this Mid-Swan Project will directly affect, or affect waters upstream of, bull trout critical habitat. The Forest Service must demonstrate how its proposed actions will comply with its duties to conserve and recover bull trout, and not adversely affect or modify designated bull trout critical habitat.

D. Water Howellia

Water howellia is listed as a threatened species under the ESA. Under Alternative B, the Forest Service proposes treatments in areas surrounding the 300-foot howellia management zone as well as extending that treatment into the buffer of the management zone. The Forest Service points to design criteria in Appendix A for "the stipulations of performing activities in the buffer" and relies on those stipulations for its analysis of impacts to water howellia. This information is insufficient to justify treatments within the buffer zone, much less demonstrate how those treatments will comply with the ESA. Given the inadequacy of the hypothetical stipulations and the lack of justification for the claimed need for treatments within the buffer of the management zone, the Forest Service should avoid any treatment within the buffer as proposed under the no action or Alternative C.

E. Pending Consultation

The Forest Service states that it will prepare a biological assessment for this project. See, e.g., DEIS at 163. It states that consultation with the Fish and Wildlife Service ("FWS") will occur for this project. DEIS at 360. We strongly urge the Forest Service to affirmatively post all consultation documents, including any Forest Service biological evaluations or assessments, any letters seeking concurrence, and any responses or biological opinions from FWS. Transparency of the consultation process is important, especially to the extent the Forest Service relies on the consultation process for its analysis of impacts to listed species or designated critical habitat, to demonstrate compliance with the Forest Plan as required by NFMA, or demonstrate compliance with the ESA. Without these records, we are unable to assess the agency's analysis of impacts to wildlife in light of FWS's expert opinion. Providing this information will allow the public to view these critical documents, and other documents in the project record, without the need to submit a formal Freedom of Information Act request. Without this information being publicly available during the notice and comment period, we are unable to meaningfully comment on the agencies' determinations or analysis.

XII. Failure to demonstrate compliance with the CWA.

Under the Clean Water Act (CWA), states are responsible for developing water quality standards to protect the desired conditions of each waterway within the state's regulatory jurisdiction. 33 U.S.C. [sect] 1313(c). Water bodies that fail to meet water quality standards are deemed "water quality-limited" and placed on the CWA's [sect] 303(d) list. The CWA requires all federal agencies to comply with water quality standards, including a state's anti-degradation policy. 33 U.S.C. [sect] 1323(a). The Forest Service must demonstrate that all activities in this proposal comply with the CWA. In particular, it must ensure its proposal for logging, and the associated road construction, maintenance, and ongoing log hauling and other uses of these roads, will not cause or contribute to a violation of Montana's water quality standards.

The project area covers 14 HUC12 watersheds. DEIS at 3 (Figure 2, map of watersheds in the planning area). Each of these HUC 12 watersheds are rated poor for the road and trail indicator. Jim Creek and Goat Creek within the Mid-Swan project area are currently listed as impaired for sediment and on the MDEQ 303(d) list. DEIS at 157. The listed source of water quality impairment for Jim Creek is historic timber harvesting and for Goat Creek, roads, and historic timber harvest. Id. The Forest Service states that "[r]estoration actions proposed for implementation in this project are designed to reduce the delivery rate of fine-grained sediment to the aquatic environment, and this is expected to eventually lead to delisting of these watersheds." DEIS at 162. In its analysis, the Forest Service fails to recognize that it will be adding new forest roads and a significant amount of new logging activity within the watersheds. This is a relevant factor that the Forest Service fails to consider.

The best available science shows that roads cause significant adverse impacts to National Forest resources. A 2014 literature review from The Wilderness Society surveys the extensive and best available scientific literature[mdash]including the Forest Service's General Technical Report synthesizing the scientific information on forest roads (Gucinski 2001)[mdash]on a wide range of road-related impacts to ecosystem processes and integrity on National Forest lands. See The Wilderness Society, *Transportation Infrastructure and Access on National Forests and Grasslands: A Literature Review* (May 2014). Forest roads are a major source of sediment pollution to receiving waters. Erosion, compaction, and other alterations in forest geomorphology and hydrology associated with roads seriously impair water quality and aquatic species viability. Roads disturb and fragment wildlife habitat, altering species distribution, interfering with critical life functions such as feeding, breeding, and nesting, and resulting in loss of biodiversity. Roads facilitate increased human intrusion into sensitive areas, resulting in poaching of rare plants and animals, human-ignited wildfires, introduction of exotic species, and damage to archaeological resources. This project would authorize log truck hauling and other heavy equipment use on new forest roads. Increased haul traffic will contribute sediment and nutrients to sub-watersheds in the project area.

Best Management Practices (BMPs) and project design features are insufficient to fully mitigate the impacts to water quality and water quantity that will result from this project, without more site-specific detail as to where, when, and how the logging treatments and associated forest roads (and necessary equipment and log hauling) will occur. The Forest Service's analysis fails to demonstrate how the proposed activities will benefit water quality in the project area, much less avoid causing or contributing to a violation of water quality standards.

XIII. Failure to ensure compliance with the Roadless Rule and NEPA, and otherwise avoid unroaded areas.

The Forest Service adopted the Roadless Area Conservation Rule (Roadless Rule) in 2001 "to protect and conserve inventoried roadless areas on National Forest System lands." Forest Service, *Special Areas, Roadless Area Conservation, Final Rule*, 66 Fed. Reg. 3244 (Jan. 12, 2001). The rule observed:

Inventoried roadless areas provide clean drinking water and function as biological strongholds for populations of threatened and endangered species. They provide large, relatively undisturbed landscapes that are important to biological diversity and the long-term survival of many at risk species. Inventoried roadless areas provide opportunities for dispersed outdoor recreation, opportunities that diminish as open space and natural settings are developed elsewhere. They also serve as bulwarks against the spread of non-native invasive plant species and provide reference areas for study and research.

66 Fed. Reg. at 3245. The Roadless Rule "prohibits road construction, reconstruction, and timber harvest in inventoried roadless areas because they have the greatest likelihood of altering and fragmenting landscapes, resulting in immediate, long-term loss of roadless area values and characteristics." 66 Fed. Reg. at 3244.

Despite the institutional command that the Forest Service safeguard and conserve these areas, the Mid-Swan Project attempts to squeeze through the Roadless Rule's narrow exceptions logging across nearly 30,000 acres,

as well as heavy equipment use, in roadless areas. The Mid-Swan Project does so without the site-specific analysis the Forest Service required and expected when it adopted the Roadless Rule. Further, what analysis the DEIS contains does not demonstrate that the proposed action will meet any of the requirements of the Roadless Rule exceptions. Because the Forest Service's proposal and analysis of roadless area logging violates the Roadless Rule, the agency must prepare a supplemental draft EIS that discloses to the public the impacts to roadless forest and ensures compliance with the Rule.

A. The Roadless Area Conservation Rule.

The Roadless Rule generally prohibits road construction and timber removal within Inventoried Roadless Areas. 36 C.F.R. [sect] 294.12(a) (generally prohibiting road construction); 36 C.F.R. [sect] 294.13(a) (generally prohibiting timber removal). The Roadless Rule contains exceptions to the logging prohibition, but they are narrowly tailored:

Notwithstanding the prohibition in paragraph (a) of this section, timber may be cut, sold, or removed in inventoried roadless areas if the Responsible Official determines that one of the following circumstances exists. The cutting, sale, or removal of timber in these areas is expected to be infrequent.

(1) The cutting, sale, or removal of generally small diameter timber is needed for one of the following purposes and will maintain or improve one or more of the roadless area characteristics as defined in [sect] 294.11.

(i) To improve threatened, endangered, proposed, or sensitive species habitat; or

(ii) To maintain or restore the characteristics of ecosystem composition and structure, such as to reduce the risk of uncharacteristic wildfire effects, within the range of variability that would be expected to occur under natural disturbance regimes of the current climatic period.

36 C.F.R. [sect] 294.13(b)(1) (emphasis added). The Roadless Rule defines "roadless area characteristics" as including:

(1) High quality or undisturbed soil, water, and air;

(2) Sources of public drinking water;

(3) Diversity of plant and animal communities;

(4) Habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species dependent on large, undisturbed areas of land;

(5) Primitive, semi-primitive nonmotorized and semi-primitive motorized classes of dispersed recreation;

(6) Reference landscapes;

(7) Natural appearing landscapes with high scenic quality;

(8) Traditional cultural properties and sacred sites; and

(9) Other locally identified unique characteristics.

36 C.F.R. [sect] 294.11. The Roadless Rule anticipates that the Forest Service will engage in a highly site-specific analysis before it can consider logging in IRAs, given the regulation's emphasis on "locally identified

unique characteristics." *Id.* (emphasis added). The Roadless Rule's preamble reinforces the need for such a site-specific analysis.

Because of the great variation in stand characteristics between vegetation types in different areas, a description of what constitutes "generally small diameter timber" is not specifically included in this rule. Such determinations are best made through project specific or land and resource management plan NEPA analyses, as guided by ecological considerations such as those described below. The intent of the rule is to limit the cutting, sale, or removal of timber to those areas that have become overgrown with smaller diameter trees[hellip].

[A] If such determinations of what constitutes "generally small diameter timber" will consider how the cutting or removal of various size classes of trees would affect the potential for future development of the stand, and the characteristics and interrelationships of plant and animal communities associated with the site and the overall landscape. Site productivity due to factors such as moisture and elevational gradients, site aspect, and soil types will be considered, as well as how such cutting or removal of various size classes of standing or down timber would mimic the role and legacies of natural disturbance regimes in providing the habitat patches, connectivity, and structural diversity critical to maintaining biological diversity. In all cases, the cutting, sale, or removal of small diameter timber will be consistent with maintaining or improving one or more of the roadless area characteristics as defined in [sect] 294.11. [hellip].

Vegetative management would focus on removing generally small diameter trees while leaving the overstory trees intact. The cutting, sale, or removal of trees pursuant to 294.13(b)(1) must be clearly shown through project level analysis to contribute to the ecological objectives described. Such management activities are expected to be rare and to focus on small diameter trees.

66 Fed. Reg. 3244, 3257-58 (Jan. 12, 2001).

B. The Mid-Swan Action Alternatives Propose Tree Removal in Inventoried Roadless Areas.

The DEIS contemplates tree removal in two "management emphasis groups" (MEGs) involving inventoried roadless areas: the "inventoried roadless" MEG, and the "recommended wilderness" MEG, which is also comprised almost entirely of inventoried roadless areas.

The DEIS proposes at least three types of logging treatments within the "inventoried roadless" MEG. First, both action alternatives propose "[m]echanized treatments for non-commercial objectives" the roadless areas. The DEIS states:

Treatments in this category are only proposed for inventoried roadless areas. 3,236 acres for alternative B, and 1,753 acres for alternative C. Treatments have various objectives including decreasing stand densities to increase vigor of large and desirable trees, reduce unnatural fuel loadings, improve wildlife habitat, and promote western white pine or whitebark pine on suitable sites. Treatments may create openings to regenerate western white pine and whitebark pine by planting rust-resistant seedlings.

DEIS at 56. See also *id.* at 331 ("These treatments would reduce stand densities and create openings in Inventoried Roadless Areas.").

Second, both action alternatives propose "[m]echanized young stand thinning (also called pre-commercial thinning)" to "adjust tree density and species composition" in the inventoried roadless MEG. DEIS at 56. "This tool would primarily be used in young stands to reduce the density of saplings and small poles up to a maximum diameter of 6" at breast height. Treatments would increase the growing space and tree health in young forest stands and select for preferred species such as ponderosa pine, western larch, Douglas-fir and western white pine." DEIS at 56-57. The Forest Service proposes 193 acres of mechanized young stand thinning under

Alternative B, and 109 acres of such treatments under Alternative C. See DEIS at 55-56 (Tables 22 and 23).

Third, 10,085 acres could be treated with "hand treatments" under Alternative B, and 6,243 acres under Alternative C in the inventoried roadless MEG. DEIS at 57-58 (Tables 24, 25). "Hand treatments include activities such as hand thinning, pruning, girdling, hand piling and burning, prescribed fire, tree planting and direct seeding. Activities may include potential helicopter support in remote areas, including recommended wilderness areas, without road access. Treatments address fuel reduction needs in order to reintroduce fire in stands historically characterized by frequent low-severity fire." DEIS at 58.

In total, Alternative B would involve tree removal on 13,514 acres of 17,198 acres (79%) of the inventoried roadless MEG in the project area, while Alternative C would involve tree removal on 8,104 acres of 17,198 acres (47%) of the inventoried roadless MEG. DEIS at 62-64 (Tables 26, 27).

The DEIS also contemplates significant tree removal inside recommended wilderness areas, which the Forest Service identifies as a separate "management emphasis group," despite the fact that the vast majority of land within recommended wilderness also constitute inventoried roadless areas protected by the Roadless Rule. Under Alternative B, 20,423 acres could be subject to hand treatments, including thinning; under Alternative C, 14,420 acres could be so treated. DEIS at 62-64 (Tables 26, 27).

The total acreage subject to logging via the three types of treatments in all inventoried roadless areas subject to the Roadless Rule amounts to "29,772 acres in alternative B and 20,188 acres in alternative C within the [inventoried roadless areas]." DEIS at 316. That appears to amount to more than half of the all inventoried roadless areas protected by the Roadless Rule under Alternative B, and about 40% of all such areas under Alternative C.

The DEIS affirms that "[a] treatments in inventor[ied] roadless areas would be non- commercial and no new roads are proposed." DEIS at 56. However, the analysis also admits that "heavy equipment (for example, excavators and masticators) could be operated in some of the areas (3,429 acres) within the boundaries of inventoried roadless areas to attain resource objectives." DEIS at 86.

C. The Action Alternatives Violate the Roadless Rule Because the Forest Service Fails to Ensure Logging in Roadless Areas Will Be "Infrequent."

The Mid-Swan action alternatives fail to ensure that the "cutting, sale, or removal of timber" will be "infrequent" as the Roadless Rule requires. 36 C.F.R. [sect] 294.13(b). The removal of timber will occur over a vast portion of the roadless landscape - close to half of the roadless acres under Alternative C and well over half under Alternative B. Further, timber removal may occur over a 15-year period, from 2023-2037, with impacts lasting up to seven years longer than that. DEIS at 312 ("Project implementation would likely occur for up to 15 years post-decision."); see also id. at 75-76, 78-80, 82-84, 215 (Table 137) (time period); id. at 360 ("Both action alternatives would result in varying levels of unavoidable short-term adverse effects (5-7 years post implementation) on inventoried roadless areas [hellip] [and] recommended wilderness").

"Infrequent" is defined as "seldom happening or occurring" and "rare." See Merriam-Webster online dictionary, available at <https://www.merriam-webster.com/dictionary/infrequent> (last viewed Oct. 6, 2020). There is no reasonable construction of the term under which tree removal over this large landscape, and this significant portion of all roadless areas within the project area, over this time scale, could be considered "infrequent." The DEIS does not address this requirement in the context of the Roadless Rule.

Unless and until the Forest Service ensures that tree removal will be "infrequent" and "rare," it cannot approve either of the proposed actions.

D. The Action Alternatives Violate the Roadless Rule and NEPA by Failing to Identify an Exception Authorizing Tree Removal and by Failing to Undertake a Site-Specific Analysis of Small Diameter Timber.

While the Forest Service proposes tens of thousands of acres of tree removal in inventoried roadless areas where the Roadless Rule applies, the Draft EIS fails to identify the exception in 36 C.F.R. [sect] 294.13(b) that would permit the agency to undertake proposed logging under either action alternative. This failure violates both the Roadless Rule and the agency's duty to disclose environmental impacts pursuant to NEPA. The Forest Service's failure to disclose which exception applies, it is impossible for the public to be able to comment effectively on whether the proposed actions meet the Roadless Rule's mandates. Any subsequently prepared NEPA document must explicitly identify the exception the Forest Service intends to invoke.

It appears, however, that the Forest Service is likely to invoke 36 C.F.R. [sect] 294.13(b)(1)(ii), under which the agency may authorize logging in inventoried roadless areas "[t]o maintain or restore the characteristics of ecosystem composition and structure, such as to reduce the risk of uncharacteristic wildfire effects, within the range of variability that would be expected to occur under natural disturbance regimes of the current climatic period." This seems to comport with the project's general purpose and need, and none of the other exceptions appear to apply. The agency does not assert that the proposed action is needed to "improve threatened, endangered, proposed, or sensitive species habitat;" that logging is "is incidental to the implementation of a management activity not otherwise prohibited;" that logging is "needed and appropriate for personal or administrative use;" or that the logging will take place in the "substantially altered" portion of any of the roadless areas at issue. 36 C.F.R. [sect] 294.13(b)(1)(i), (b)(2), (b)(3), (b)(4). Assuming the Forest Service intends to invoke this exception, however, it has failed to demonstrate that the agency can take advantage of this narrow exception.

The exception requires that the Forest Service ensure that tree removal will be limited to "generally small diameter timber." 36 C.F.R. [sect] 294.13(b)(1). Of the three types of logging proposed in roadless areas, the DEIS identifies size guidelines for only one: "[m]echanized young stand thinning," which would "primarily be used in young stands to reduce the density of saplings and small poles up to a maximum diameter of 6" at breast height." DEIS at 56 (emphasis added). Use of the equivocating term "primarily" makes it unclear whether the "maximum" diameter limit will place any practical limits on the size of trees logged, however.

For the other two categories of tree removal ("mechanized treatments for non-commercial objectives" and "hand treatments") - which constitute more than 90% of the acreage where trees will be removed from areas governed by the Roadless Rule - the DEIS contains no discussion that we could find limiting or even addressing the size of trees that can be removed. Because mechanized treatments for non-commercial objectives "would reduce stand densities and create openings in Inventoried Roadless Areas," DEIS at 331, it seems like that larger diameter trees will be logged.

The Forest Service has failed to address or comply with the Roadless Rule's requirement that tree removal under the exception should generally involve only small diameter timber.

In addition, in crafting the Roadless Rule, the Forest Service stated that the agency would undertake a site-specific - and stand-specific - review to identify whether and where such tree removal would be appropriate. The Roadless Rule's preamble directs that "[t]he cutting, sale, or removal of trees pursuant to 294.13(b)(1) must be clearly shown through project level analysis to contribute to the ecological objectives described." 66 Fed. Reg. at 3258 (emphasis added). The Roadless Rule preamble anticipated that the Forest Service would "consider how the cutting or removal of various size classes of trees would affect the potential for future development of the stand," and would consider "[s]ite productivity due to factors such as moisture and elevational gradients, site aspect, and soil types [hellip] as well as how such cutting or removal of various size classes of standing or down timber would mimic the role and legacies of natural disturbance regimes in providing the habitat patches, connectivity, and structural diversity critical to maintaining biological diversity." 66 Fed. Reg. at 3257 (emphasis

added).

The DEIS does not demonstrate that the Forest Service has undertaken this necessary evaluation. While the DEIS contains some information about where logging will occur within areas protected by the Roadless Rule, that data does not permit either the public or the decision-maker to understand the values of each specific roadless area, how logging will impact those areas, why logging on the specific acreage identified may meet the requirements of specific exemptions, or why logging a certain diameter of tree may be appropriate.

For example, while the DEIS contains maps displaying where certain types of treatments may occur in roadless areas and recommended wilderness, see DEIS Appendix B at Figures 63-66, the maps make it difficult to discern where treatments overlap with roadless areas, and the roadless area boundaries are difficult to identify. The maps provide intricately-shaped polygons where certain treatments will occur, but the DEIS provides no explanation for why an alternative proposes any of the three types of logging treatments in a specific area, not to mention a specific stand, or why and how the alternatives differ. The DEIS's 5.25 page analysis focusing on roadless areas presents no stand-specific data for roadless areas, nor does it address the size of trees to be logged.

The DEIS also fails to demonstrate that logging within inventoried roadless areas will "maintain or improve one or more of the roadless area characteristics as defined in [36 C.F.R.] [sect] 294.11," as 36 C.F.R. [sect] 294.13(b)(1) requires. The DEIS's analysis of impacts to roadless characteristics is cursory and relies largely on "design criteria" which are "expected to minimize adverse effects," without saying which design criteria will do so, or on what basis the Forest Service's "expectation" is based. DEIS at 316 (emphasis added). For example, the analysis of impacts to scenic values of tens of thousands of acres of logging across diverse ecosystems and distinct roadless areas is one sentence with no supporting analysis: "Both alternatives are not expected to negatively affect the natural appearance of the landscapes." DEIS at 316. The "analysis" of potential impacts to another roadless area characteristic is similarly summary: "Both alternatives will continue to provide for the diversity of plant and animal communities. Both action alternatives include similar design criteria to minimize effects to habitat." DEIS at 316. Again, this is not analysis; it is conclusion. Nowhere does the DEIS specifically assert that the nine roadless area characteristics will be "maintained" or "improved." Further, Appendix A, containing the design criteria, does not include the word "roadless," nor does it evaluate or otherwise assess the effectiveness of the design criteria.

The less-than-one-page analysis of impacts to roadless areas from the action alternatives also fails to differentiate between the effects of those two alternatives, despite the fact that Alternative B proposes logging on 9,500+ more acres of roadless forest, or more than 50% more acreage, than Alternative C. If the alternatives have exactly the same impacts on roadless areas, this undermines any contention that the agency has considered a range of reasonable alternatives, and it should consider at least one action alternative that has fewer impacts on lands protected by the Roadless Rule than Alternatives B and C.

The cursory analysis concluding that neither action alternative will impact a variety of roadless area characteristics is also at odd with another section of the DEIS which acknowledges:

Both action alternatives would result in varying levels of unavoidable short-term adverse effects (5-7 years post implementation) on inventoried roadless areas, wilderness, recommended wilderness, eligible wild and scenic rivers, water quality, weed introduction and spread, Canada Lynx habitat, wolverine habitat, elk and mule deer habitat. Some of the effects could be considered more than short term but every attempt to minimize long term adverse effects have been included in both alternatives.

DEIS at 360. It is unclear how the Forest Service can square the potential for long term adverse impacts with the assertions of no negative effects elsewhere in the document, or with the Roadless Rule's mandate that actions in roadless areas must maintain or improve many of the very characteristics the DEIS admits may suffer long-term

damage.

Finally, we note that while the DEIS asserts that "[t]he no-action alternative is consistent with the 2001 RACR," DEIS at 316, it contains no similar assertion for either of the action alternatives, a telling omission.

E. The Forest Service Must Identify How Heavy Equipment Will Be Transported and Used in Roadless Areas.

The DEIS does not contain a section addressing the nature of the transportation network that the agency intends to use to access the project area to undertake the proposed logging and other treatments. The analysis acknowledges that logging within roadless areas will require the use of heavy machinery requiring road access. "While no temporary or permanent road construction would occur [within roadless areas], heavy equipment (for example, excavators and masticators) could be operated in some of the areas (3,429 acres) within the boundaries of inventoried roadless areas to attain resource objectives." DEIS at 86. The DEIS fails to disclose or map the location of these 3,429 acres, nor does it explain why this number of acres and not more (or less) may require the use of this machinery. The use of excavators, masticators and other similar equipment could harm soils and create de facto roads, an impact the DEIS fails to address, contradicting NEPA's "hard look" mandate.

The failure to disclose the transportation network also implicates Roadless Rule compliance. We note that a U.S. District Court recently set aside a Forest Service restoration project in Montana because the agency failed to properly identify the transportation system that would be used to access treatments within inventoried roadless areas. See *Helena & Anglers Ass'n v. Marten*, 2020 U.S. Dist. LEXIS 115652 (D. Mont. July 1, 2020) at *32-*38, attached as Attachment V. To comply with NEPA and the Roadless Rule, the Forest Service must disclose where and how it intends to move heavy equipment into roadless areas.

CONCLUSION

ATTACHMENTS

Attachment A: H. Powell, *Old Flames: The Tangled History of Forest Fires, Wildlife, and People*, available at <https://www.allaboutbirds.org/old-flames-the-tangled-history-of-forest-fires-wildlife-and-people>, All About Birds (last accessed July 2, 2019).

Attachment B: Calkin, D.E., et al., *How risk management can prevent future wildfire disasters in the wildland-urban interface*, PNAS (2014), Vol. 111 No. 2:746-751.

Attachment C: Schoennagel, T., et al., *Adapt to more wildfire in western North American forests as climate changes*, PNAS (2017) Vol. 114 no. 18:4582-4590.

Attachment D: Six, D.L., et al., (2018) *Are Survivors Different? Genetic-Based Selection of Trees by Mountain Pine Beetle During a Climate Change-Driven Outbreak in a High-Elevation Pine Forest*, *Front. Plant. Sci.* 9:993, doi: 10.3389/fpls.2018.00993.

Attachment E: Barnett, K., S.A. Parks, C. Miller, H.T. Naughton. 2016. *Beyond Fuel Treatment Effectiveness: Characterizing Interactions between Fire and Treatments in the US. Forests*, 7, 237.

Attachment F: Hart, S.J., T. Schoennagel, T.T. Veblen, and T.B. Chapman. 2015. *Area burned in the western United States is unaffected by recent mountain pine beetle outbreaks*. *Proceedings of the National Academy of Sciences*. Vol. 112, No. 14.

Attachment G: Hart, S.J., and D.L. Preston. 2020. *Fire weather drives daily area burned and observations of fire behavior in mountain pine beetle affected landscapes*. *Environ. Res. Lett.* 15 054007.

Attachment H: Black, S. H., D. Kulakowski, B.R. Noon, and D. DellaSala. 2010. Insects and Roadless Forests: A Scientific Review of Causes, Consequences and Management Alternatives. National Center for Conservation Science & Policy, Ashland OR.

Attachment I: Six, D.L., E. Biber, E. Long. 2014. Management for Mountain Pine Beetle Outbreak Suppression: Does Relevant Science Support Current Policy? *Forests*, 5.

Attachment J: Rhodes, J. and Baker, W. 2008. Fire Probability, Fuel Treatment Effectiveness and Ecological Tradeoffs in Western U.S. Public Forests. *The Open Forest Science Journal*, 2008, 1.

Attachment K: Lydersen, J., North, M., Collins, B. 2014. Severity of an uncharacteristically large wildfire, the Rim Fire, in forests with relatively restored frequent fire regimes. *Forest Ecology and Management* 328 (2014) 326-334.

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Attachment S: The Environmental Consequences of Forest Roads and Achieving a Sustainable Road System (March 2020)

Attachment T: Case Closed: Public Motorized Trespass and Administrative Activity on Closed Roads in the Upper Swan, Lower Swan, and Noisy Face Geographic Units by the Swan View Coalition. 2004.

Attachment U: Sept. 9, 2020 email from Joseph Krueger, Forest Service, to Keith Hammer.

Attachment V: *Helena & Anglers Ass'n v. Marten*, 2020 U.S. Dist. LEXIS 115652 (D. Mont. July 1, 2020)

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FOOTNOTES:

1 See, e.g., FSH 1909.15, 14.2; Council on Environmental Quality's (CEQ) Forty Most Asked Questions (1981), #3 (explaining "[t]here are two distinct interpretations of 'no action'"; one is "'no change' from current management direction or level of management intensity," and the other is if "the proposed activity would not take place").

2 Potyondy J.P. and Geier T.W. 2011. Watershed Condition Classification Technical Guide. FS-978. (defining open road density as "to include roads and all lineal features on the landscape that typically influence watershed processes and conditions in a manner similar to roads. Roads, therefore, include Forest Service system roads (paved or nonpaved) and any temporary roads (skid trails, legacy roads) not closed or decommissioned, including private roads in these categories," p. 26.