May 2, 2022

Objection Reviewing Officer
USDA Forest Service, Southwest Region
333 Broadway Blvd SE
Albuquerque, NM 87102
Submitted via email to: objections-southwestern-regional-office@usda.gov

Re: OBJECTIONS Pursuant to 36 C.F.R. § 218.8 to 4FRI Rim Country Project Draft Record of Decision and Final Environmental Impact Statement (Apache-Sitgreaves, Coconino, and Tonto National Forests)

To the Objection Reviewing Officer:

The Center for Biological Diversity submit these timely objections to the U.S. Forest Service's draft Record of Decision ("Draft ROD") and final environmental impact statement ("Final EIS") for the 4FRI Rim Country Project ("Rim Country Project") on the Apache-Sitgreaves National Forests, Coconino National Forest, and Tonto National Forest.

Project Objected To

Pursuant to 36 C.F.R. § 218.8(d)(4), Center for Biological Diversity *et al*. object to the following project:

> *Project*: Rim Country Project, Apache-Sitgreaves National Forests, Coconino National Forest, and Tonto National Forest
>
> *Responsible Official and Forest/Ranger District*: Forest Supervisor Judith Palmer, Apache-Sitgreaves National Forests; Forest Supervisor Laura Jo West, Coconino National Forest; and Forest Supervisor Neil Bosworth, Tonto National Forest

Timeliness

Notice of the Draft ROD and Final EIS was published in the Arizona Daily Sun (the newspaper of record) on March 18, 2022, making the deadline for filing May 2, 2022. These objections are therefore timely filed.

Lead Objector

Per 36 C.F.R. § 218.8(d)(3), the Objectors designate the "Lead Objector" as follows:

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Interests and Participation of the Objectors

The Center for Biological Diversity is a non-profit environmental organization with more than 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 Apache-Sitgreaves, Coconino, and Tonto National Forests, and the lands proposed for logging within the Rim Country Project area for recreation, photography, nature study, and spiritual renewal.

The Center is a founding member of 4FRI and has been an active stakeholder throughout the process. We were involved in forest restoration before 4FRI existed before and during the White Mt. Stewardship Project. We've advocated, since the mid-1990s, for a restoration approach that combined appropriate mechanical thinning, a right scaled restoration industry, prescribed burning, and community protection while maintaining or enhancing large and old trees, key ecological process such as fire, and protecting sensitive and listed species.

The Center submitted timely comments on scoping for the Rim Country project on August 11, 2016, and comments on the Draft EIS for the project on January16, 2020, as well as supplemental comments on February 7, 2020.

New issues emerged, following USFS analysis of comments on the Rim Country DEIS. Several other stakeholders have expressed concern about issues, including the incorporation of the agreements developed by the Mexican Spotted Owl Leadership Forum, logging in inventoried roadless areas, and logging on steep slopes. Our objection addresses some of those issues as well as additional concerns.

OBJECTIONS

I. THE RIM COUNTRY EIS VIOLATES NEPA BY FAILING TO DISCLOSE THE PROJECT'S SITE-SPECIFIC IMPACTS.

A. NEPA Requires Agencies to Take a Hard Look at Site-Specific Impacts.[1]

NEPA is "'our basic national charter for protection of the environment.'"[2] In enacting NEPA, Congress recognized the "profound impact" of human activities, including "resource exploitation," on the environment and declared a national policy "to create and maintain conditions under which man and nature can exist in productive harmony."[3] The statute has two fundamental two goals: "(1) to ensure that the agency will have detailed information on significant environmental impacts when it makes decisions; and (2) to guarantee that this information will be available to a larger audience."[4]

"NEPA promotes its sweeping commitment to 'prevent or eliminate damage to the environment and biosphere' by focusing Government and public attention on the environmental effects of proposed agency action."[5] Stated more directly, NEPA's "'action-forcing' procedures . . . require the [Forest Service] to take a 'hard look' at environmental consequences"[6] *before* the agency approves an action. "By so focusing agency attention, NEPA ensures that the agency will not act on incomplete information, only to regret its decision after it is too late to correct."[7] To ensure

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[1] This action is governed by the Council on Environmental Quality's 1978 regulations, as amended, and so all references to the CEQ regulations are to those currently in force as of July 14, 2020, unless otherwise noted. Although CEQ issued a final rulemaking in July 2020 fundamentally rewriting those regulations, the new rules apply only "to any NEPA process begun after September 14, 2020," or where the agency has chosen to "apply the regulations in this subchapter to ongoing activities." 40 C.F.R. § 1506.13 (2020). The Rim Country NEPA process began before September 2020; the Forest Service issued its scoping notice for the project on June 27, 2016, and a draft EIS was issued in October 2020. The Forest Service nowhere alleges it has chosen to apply the 2020 rules to this project.

[2] *Center for Biological Diversity v. United States Forest Serv*., 349 F.3d 1157, 1166 (9th Cir. 2003) (quoting 40 C.F.R. § 1500.1).

[3] 42 U.S.C. § 4331(a).

[4] *Envtl. Prot. Info. Ctr. v. Blackwell*, 389 F. Supp. 2d 1174, 1184 (N.D. Cal. 2004) (quoting *Neighbors of Cuddy Mt. v. Alexander*, 303 F.3d 1059, 1063 (9th Cir. 2002)); *see also Earth Island v. United States Forest Serv.*, 351 F.3d 1291, 1300 (9th Cir. 2003) ("NEPA requires that a federal agency 'consider every significant aspect of the environmental impact of a proposed action ... [and] inform the public that it has indeed considered environmental concerns in its decision-making process.'").

[5] *Marsh v. Or. Natural Res. Council*, 490 U.S. 360, 371 (1989) (quoting 42 U.S.C. § 4321).

[6] *Metcalf v. Daley*, 214 F.3d 1135, 1141 (9th Cir. 2000) (quoting *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 348 (1989)).

[7] *Marsh*, 490 U.S. at 371 (citation omitted).

that the agency has taken the required "hard look," courts hold that the agency must utilize "public comment and the best available scientific information."[8]

In *Natural Resources Defense Council v. U.S. Forest Service*, for example, the Court faulted the Forest Service for providing empty disclosures that lacked any analysis, explaining the agency "d[id] not disclose the effect" of continued logging on the Tongass National Forest and "d[id] not give detail on whether or how to lessen the cumulative impact" of the logging.[9] The Court explained that "general statements about possible effects and some risk do not constitute a hard look, absent a justification regarding why more definitive information could not be provided."[10] The court reasoned that the Forest Service also must provide the public "'the underlying environmental data' from which the Forest Service develop[ed] its opinions and arrive[d] at its decisions."[11] In the end, "vague and conclusory statements, without any supporting data, do not constitute a 'hard look' at the environmental consequences of the action as required by NEPA."[12] "The agency must explain the conclusions it has drawn from its chosen methodology, and the reasons it considered the underlying evidence to be reliable."[13]

At the project level, as compared to a programmatic decision, the required level of analysis is more stringent.[14] At the "implementation stage," the NEPA review is more tailored and detailed because the Forest Service is confronting "individual site specific projects."[15] Indeed, federal courts have faulted the Forest Service for failing to provide site-specific information in a landscape level analysis:

> This paltry information does not allow the public to determine where the range for moose is located, whether the areas open to snowmobile use will affect that range, or whether the Forest Service considered alternatives that would avoid adverse impacts on moose and other big game wildlife. In other words, the EIS does not provide the information necessary to determine how specific land should be allocated to protect particular habitat important to the moose and other big game

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[8] *Biodiversity Cons. Alliance v. Jiron*, 762 F.3d 1036, 1086 (10th Cir. 2014) (internal citation omitted).

[9] *Natural Res. Def. Council v. U.S. Forest Serv.,* 421 F.3d 797, 812 (9th Cir. 2005).

[10] *Or. Natural Res. Council Fund v. Brong*, 492 F.3d 1120, 1134 (9th Cir. 2007) (citation omitted); *see also Or. Natural Res. Council Fund v. Goodman*, 505 F.3d 884, 892 (9th Cir. 2007) (holding the Forest Service's failure to discuss the importance of maintaining a biological corridor violated NEPA, explaining that "[m]erely disclosing the existence of a biological corridor is inadequate" and that the agency must "meaningfully substantiate [its] finding").

[11] *WildEarth Guardians v. Mont. Snowmobile Ass'n*, 790 F.3d 920, 925 (9th Cir. 2015).

[12] *Great Basin Mine Watch v. Hankins*, 456 F.3d 955, 973 (9th Cir. 2006).

[13] *N. Plains Res. Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1075 (9th Cir. 2011) (citation and internal quotation marks omitted).

[14] *See, e.g., Friends of Yosemite Valley v. Norton*, 348 F.3d 789, 800-01 (9th Cir. 2003).

[15] *Forest Ecology Ctr., Inc. v. U.S. Forest Serv*., 192 F.3d 922, 923 n.2 (9th Cir. 1999).

> wildlife. Because the Forest Service did not make the relevant information available . . . the public was limited to two-dimensional advocacy—interested persons could argue only for the allocation of more or less land for snowmobile use, but not for the protection of particular areas. As a result, the Forest Service effectively stymied the public's ability to challenge agency action.[16]

When the Forest Service fails to conduct that site-specific analysis, the agency "does not allow the public to 'play a role in both the decision-making process and the implementation of that decision.'"[17] "Although the agency does have discretion to define the scope of its actions, . . . such discretion does not allow the agency to determine the specificity required by NEPA."[18] In *State of Cal. v. Block*, for example, the decision concerned 62 million acres of National Forest land, and the Ninth Circuit still required an analysis of "[t]he site-specific impact of this decisive allocative decision."[19] In short, NEPA's procedural safeguards are designed to guarantee that the public receives accurate *site-specific* information regarding the impacts of an agency's project-level decision *before* the agency approves the decision.

Analyzing and disclosing site-specific impacts is critical because where (and when and how) activities occur on a landscape strongly determines that nature of the impact. As the Tenth Circuit Court of Appeals has explained, the actual "location of development greatly influences the likelihood and extent of habitat preservation. Disturbances on the same total surface area may produce wildly different impacts on plants and wildlife depending on the amount of contiguous habitat between them."[20] The Court used the example of "building a dirt road along the edge of an ecosystem" and "building a four-lane highway straight down the middle" to explain how those activities may have similar types of impacts, but the extent of those impacts – in particular on habitat disturbance – is different.[21] Indeed, "location, not merely total surface disturbance, affects habitat fragmentation,"[22] and therefore location data is critical to the site-specific analysis NEPA requires. Merely disclosing the existence of particular geographic or biological features is inadequate—agencies must discuss their importance and substantiate their findings as to the impacts.[23]

Courts in the Ninth Circuit have taken a similar approach. For example, the U.S. District Court for the District of Alaska in 2019 issued a preliminary injunction in the case *Southeast Alaska Conservation Council v. U.S. Forest Service,* halting implementation of the Tongass National

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[16] *WildEarth Guardians v. Montana Snowmobile Ass'n*, 790 F.3d 920, 927 (9th Cir. 2015).

[17] *Id*. at 928 (quoting Methow Valley Citizens Council, 490 U.S. at 349).

[18] *City of Tenakee Springs v. Block*, 778 F.2d 1402, 1407 (citing *California v. Block*, 690 F.2d 753, 765 (9th Cir. 1982)).

[19] *California v. Block*, 690 F.2d 753, 763 (9th Cir. 1982).

[20] *New Mexico ex rel. Richardson*, 565 F.3d at 706.

[21] *Id*. at 707.

[22] *Id*.

[23] *Or. Natural Res. Council Fund v. Goodman*, 505 F.3d 884, 892 (9th Cir. 2007).

Forest's Prince of Wales Landscape Level Analysis Project.[24] The court did so because the Forest Service's "condition-based management" approach, which failed to disclose the site-specific impacts of that logging proposal, raised "serious questions" about whether that approach violated the National Environmental Policy Act (NEPA).

The district court explained the approach the Forest Service took in the Prince of Wales EIS:

> each alternative considered in the EIS "describe[d] the conditions being targeted for treatments and what conditions cannot be exceeded in an area, or place[d] limits on the intensity of specific activities such as timber harvest." But the EIS provides that "site-specific locations and methods will be determined during implementation based on defined conditions in the alternative selected in the . . . ROD . . . in conjunction with the . . . Implementation Plan . . . ." The Forest Service has termed this approach "condition-based analysis."[25]

The Prince of Wales EIS made assumptions "in order to consider the 'maximum effects' of the Project."[26] It also 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 identify the specific sites where the harvest or road construction would occur."[27]

The Court found the Forest Service's approach contradicted federal appellate court precedent, including *City of Tenakee Springs v. Block*, 778 F.2d 1402 (9th Cir. 1995). In that case, the appellate court set aside the Forest Service's decision to authorize pre-roading in a watershed without specifically evaluating where and when on approximately 750,000 acres it intended to authorize logging to occur. The district court evaluating the Prince of Wales project found the Forest Service's approach was equivalent to the deficient analysis set aside in *City of Tenakee Springs.*

> Plaintiffs argue that the Project EIS is similarly deficient and that by engaging in condition-based analysis, the Forest Service impermissibly limited the specificity of its environmental review. The EIS identified which areas within the roughly 1.8-million-acre project area could potentially be harvested over the Project's 15-year period, but expressly left site-specific determinations for the future. For example, the selected alternative allows 23,269 acres of old-growth harvest, but does not specify where this will be located within the 48,140 acres of old growth identified as suitable for harvest in the project area. Similar to the EIS found inadequate in *City of Tenakee Springs*, the EIS here does not include a determination of when and where the 23,269 acres of old-growth harvest will occur. As a result, the EIS also does not provide specific information about the

[24] *Southeast Alaska Conservation Council v. U.S. Forest Serv.*, 413 F. Supp. 3d 973 (D. Ak. 2019).

[25] *See id.* at 976-77 (citations omitted).

[26] *Id*. at 977.

[27] *Id*.

> amount and location of actual road construction under each alternative, stating instead that "[t]he total road miles needed will be determined by the specific harvest units offered and the needed transportation network."[28]

The district court concluded that plaintiffs in the case raised "serious questions" about whether the Prince of Wales EIS condition-based management approach violated NEPA because "the Project EIS does not identify individual harvest units; by only identifying broad areas within which harvest may occur, it does not fully explain to the public how or where actual timber activities will affect localized habitats."[29]

On March 11, 2020, the Alaska district court issued its merits opinion on the Prince of Wales Project, reaffirming its September 2019 preliminary injunction decision and holding that the Forest Service's condition-based management approach violated NEPA.[30] The court explained that "NEPA requires that environmental analysis be specific enough to ensure informed decision-making and meaningful public participation. The Project EIS's omission of the actual location of proposed timber harvest and road construction within the Project Area falls short of that mandate."[31]

The district court also concluded that the Forest Service's "worst case analysis" was insufficient, explaining: "This approach, coupled with the lack of site-specific information in the Project EIS, detracts from a decisionmaker's or public participant's ability to conduct a meaningful comparison of the probable environmental impacts among the various alternatives."[32] Consequently, the court concluded that

> By authorizing an integrated resource management plan but deferring siting decisions to the future with no additional NEPA review, the Project EIS violates NEPA. The Forest Service has not yet taken the requisite hard look at the environmental impact of site-specific timber sales on Prince of Wales over the next 15 years. The Forest Service's plan for condition-based analysis may very well streamline management of the Tongass ... however, it does not comply with the procedural requirements of NEPA, which are binding on the agency. NEPA favors coherent and comprehensive up-front environmental analysis to ensure ... that the agency will not act on incomplete information, only to regret its decision after it is too late to correct.[33]

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[28] *Id*. at 982 (citations omitted).

[29] *Id*. at 983, 984.

[30] *Southeast Alaska Conservation Council v. United States Forest Serv*., 443 F. Supp. 3d 995 (D. Ak. 2020).

[31] *Id*. at 1009 (citations omitted).

[32] *Id*. at 1013.

[33] *Id*. at 1014-15 (internal citations and quotations omitted). The Forest Service should not interpret the Alaska District's decision to somehow endorse the use of condition-based analyses for environmental assessments. Where the exercise of site-specific discretion is material to a

B. Law and Policy Concerning Adaptive Management Require that Agencies Designate Specific Thresholds and Disclose of Impacts of Mitigation Measures.

For the Rim Project, the Forest Service discusses "adaptive management" as part of its condition-based management approach. Although different legal regimes address the two approaches, we will deal with them together as the Forest Service does.

Academic recommendations concerning adaptive management.

Academics conclude that effective adaptive management should involve treating management interventions as experiments, the outcomes of which are monitored and fed back into management planning. As outlined by land management experts, an adaptive management approach to forest management should include the following:

- Creation of management strategies (specific action alternatives in this case);
- Implementation of those strategies/actions;
- Monitoring of the effects (under the monitoring framework developed as part of the planning process); and
- Predetermined triggers for changes in management based on the results of monitoring.[34]

Forest Service experts in adaptive management have said that "[a]daptive management requires explicit designs that specify problem-framing and problem-solving processes, documentation and monitoring protocols, roles, relationships, and responsibilities, and assessment and evaluation processes."[35]

The fourth component, regarding triggers, is described by adaptive management experts in the following statement:

> The term trigger, as used here, is a type of pre-negotiated commitment made by an agency within an adaptive management or mitigation framework specifying what actions will be taken if monitoring information shows x or y. In other words,

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project's environmental consequences, NEPA requires consideration of site-specific proposals and alternatives, regardless of whether the effects are "significant." 42 U.S.C. § 4332(2)(C), (E).

[34] Schultz, C. and M. Nie. 2012. Decision-making triggers, adaptive management, and natural resources law and planning. *Natural Resources Journal* 52:443-521.

[35] Stankey, G.H., R.N. Clark, and B.T. Bormann. 2005. Adaptive management of natural resources: theory, concepts, and management institutions. Gen. Tech. Rep. PNW-GTR-654. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 73 p., at page 58. Available at https://www.fs.fed.us/pnw/pubs/pnw_gtr654.pdf (last viewed May 2, 2022).

> predetermined decisions, or more general courses of action, are built into an adaptive framework from the beginning of the process.[36]

The literature cited here calls for details and specifics, not ambiguity.

Regulations concerning adaptive management.

This academic framing is reinforced by the Forest Service's NEPA regulations, adopted in 2008, which define adaptive management as "[a] system of management practices based on *clearly identified intended outcomes and monitoring* to determine if management actions *are meeting those outcomes*; and, if not, to facilitate management changes that will best ensure that those outcomes are met or re-evaluated. Adaptive management stems from the recognition that knowledge about natural resource systems is sometimes uncertain."[37] These regulations further state that:

> An adaptive management proposal or alternative must *clearly identify the adjustment(s) that may be made* when monitoring during project implementation *indicates that the action is not having its intended effect*, or is causing unintended and undesirable effects. The EIS must disclose not only the effect of the proposed action or alternative *but also the effect of the adjustment*. Such proposal or alternative must also *describe the monitoring that would take place* to inform the responsible official during implementation whether the action is having its intended effect.[38]

The preamble to the Forest Service's regulation that adopted the adaptive management definition states that the agency must identify the proposed changes, and their impacts, in the NEPA document. "When proposing an action the responsible official may identify possible adjustments that may be appropriate during project implementation. Those possible adjustments must be described and their effects analyzed in the EIS." 73 Fed. Reg. 43,084, 43,090 (July 24, 2008).

Federal caselaw concerning adaptive management.

Federal courts have found agencies violated NEPA or the Endangered Species Act (ESA) where the agency relied on an "adaptive management" plan that was vague, set no specific triggers for future action, failed to describe that future action, or failed to ensure that resources will be protected as the adaptive management plan asserts.

In *Natural Resources Defense Council v. U.S. Army Corps of Engineers*, 457 F. Supp. 2d 198 (S.D.N.Y. 2006), the court found that the Army Corps' attempt to supplement an inadequately-explained finding of no significant impact concerning a dredging project was arbitrary and

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[36] Schultz and Nie, Decision-making triggers, adaptive management, and natural resources law and planning at 455.

[37] 36 C.F.R. § 220.3 (emphasis added).

[38] 36 C.F.R. § 220.5(e)(2) (emphasis added).

capricious where the agency relied on ill-defined "adaptive management" protocols to conclude that impacts would be mitigated below the level of significance.

> The EA makes several promises that it will alter its monitoring plan should it prove necessary. For example, the EA relies on a general promise that it will "as appropriate, reevaluate, the need for altering its dredging methods" … through the use of its coordination plan and monitoring program. The EA also explains that the Corps will follow "adaptive management practices as it moves through construction of its contracts," thus allowing it to change future contracts should the data indicate it is necessary. These promises, however, provide no assurance as to the efficacy of the mitigation measures. The Corps did not provide a proposal for monitoring how effective "adaptive management" would be.[39]

Mountaineers v. United States Forest Service, 445 F. Supp. 2d 1235 (W.D. Wash. 2006) set aside a Forest Service decision to open motor vehicle trails where the agency proposed to monitor impacts to wildlife and potentially change the trails later based on an adaptive management plan. The court stated that these adaptive management strategies "amount … to a 'build-first, study later' approach to resource management. This backward-looking decision making is not what NEPA contemplates."[40] Other cases similarly conclude that NEPA forbids the use of ill-defined adaptive management plans to assume away likely impacts of agency action.[41]

Courts also hold unlawful agency projects that may impact species protected by the Endangered Species Act where the biological opinion is based on the assumption that a vague and ill-defined monitoring and adaptive management plan will mitigate impacts to the species at issue. These cases provide a useful analogy to adaptive management in the NEPA context. *Natural Resources Defense Council v. Kempthorne*, 506 F. Supp. 2d 322 (E.D. Ca. 2007) is key precedent. There, plaintiffs challenged a proposed plan to manage water diversions in a manner that could adversely impact the delta smelt, a species listed as threatened under the Endangered Species Act. The Fish and Wildlife Service prepared a biological opinion (BiOp) on the proposal which concluded that the project would neither jeopardize the smelt nor adversely modify the smelt's critical habitat. "Although the BiOp recognize[d] that *existing* protective measures may be inadequate, the FWS concluded that certain proposed protective measures, including … a proposed 'adaptive management' protocol would provide adequate protection."[42]

Plaintiffs alleged, among other things, that the BiOp "relie[d] upon uncertain (and allegedly inadequate) adaptive management processes to monitor and mitigate the [project's] potential

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[39] *NRDC v. United States Army Corps of Eng'rs*, 457 F. Supp. 2d at 234 (citations omitted).

[40] *Mountaineers v. United States Forest Serv.*, 445 F. Supp. 2d at 1250.

[41] *See, e.g., High Sierra Hikers Association v. Weingardt*, 521 F. Supp. 2d 1065, 1090-91 (N.D. Ca. 2007) (overturning a Forest Service decision to liberalize the rules limiting campfires in high country parts of a wilderness area on the grounds that the agency could not rely on adaptive management to overcome an inadequate response to the problems raised in the record).

[42] *NRDC v. Kempthorne*, 506 F. Supp. 2d at 333-34 (emphasis in original).

impacts."[43] They asserted that the adaptive management plan, which required a working group meet and consider adaptive measures in light of monitoring, failed to meet the ESA's mandate that mitigation be

> "'reasonably specific, certain to occur, and capable of implementation'" because: (1) the [working group] has complete discretion over whether to meet and whether to recommend mitigation measures; (2) even if the [working group] meets and recommends mitigation measures, the [agency management team] group is free to reject any recommendations; (3) there are no standards to measure the effectiveness of actions taken; (4) reconsultation is not required should mitigation measures prove ineffective; and (5) ultimately, no action is ever required.[44]

The *Kempthorne* court cited prior caselaw holding that "a mitigation strategy [in the ESA context] must have some form of measurable goals, action measures, and a certain implementation schedule; i.e., that mitigation measures must incorporate some definite and certain requirements that ensure needed mitigation measures will be implemented."[45] The court found that adaptive management plan "does not provide the required reasonable certainty to assure appropriate and necessary mitigation measures will be implemented."[46] The court concluded that

> Adaptive management is within the agency's discretion to choose and employ, however, the absence of any definite, certain, or enforceable criteria or standards make its use arbitrary and capricious under the totality of the circumstances.[47]

C. The Final EIS Fails to Disclose the Rim Country Project's Site-Specific Direct and Indirect Effects.

The Rim Country Project Final EIS purports to be a project-level analysis. The Final EIS does not contemplate additional NEPA analysis before the project can be implemented, and site-specific ground and vegetation disturbance comments. Thus, any NEPA document prepared for the project must include the detailed information and analysis that NEPA and the CEQ regulations require because there will be no further NEPA analysis for this large, landscape-scale analysis.

Although NEPA requires that analysis disclose specific information about the when, where, and how of any agency action, so that the impacts and alternatives can be described and weighed, the

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[43] *NRDC v. Kempthorne*, 506 F. Supp. 2d at 329.

[44] *NRDC v. Kempthorne*, 506 F. Supp. 2d at 352. *See also id.* at 350 (explaining the "certain to occur" standard and citing *Ctr. for Biological Diversity v. Rumsfeld*, 198 F. Supp. 2d 1139, 1152 (D. Ariz. 2002)).

[45] *NRDC v. Kempthorne*, 506 F. Supp. 2d at 355, citing *Rumsfeld*, 198 F. Supp. 2d at1153.

[46] *NRDC v. Kempthorne*, 506 F. Supp. 2d at 356.

[47] *NRDC v. Kempthorne*, 506 F. Supp. 2d at 387.

Final EIS, like the draft, fails to contain much of this data or analysis. Instead, the Forest Service postpones site-specific project design and consideration of on-the-ground impacts until *after* the NEPA process is complete. This upends NEPA's central purpose that agencies look *before* they leap, as the Court held in *Southeast Alaska Conservation Council*.[48]

The Forest Service admits that "condition-based management," the very process held illegal in *Southeast Alaska Conservation Council*, "is being used for mechanical treatments (and prescribed fire), and aquatics and watershed restoration activities" for the Rim Project.[49]

> This type of approach does not assign specific treatments to specific acres, but rather assigns treatments to a set of conditions that occur on the landscape. Once these conditions are identified by an interdisciplinary team, the implementation plan (appendix D) is applied to identify the appropriate treatment. The need for this approach is derived from applying adaptive management considerations and lessons learned from past related projects.[50]

The Final EIS does not define, or contain an analysis of, site-specific actions, and that document states that site-specific actions will not be defined until after the public NEPA process is complete. "The [condition-based management] process begins with an initial project resource review of forest conditions and site-specific considerations that would inform the condition-based management process," after the Record of Decision.[51] The EIS reveals that the post-NEPA, "pre-project" analysis would include "a review of existing conditions, land management plan components, federally-listed species recovery plans, and the current land management plan Biological Opinion."[52] Similarly, the Forest Service would evaluate baseline conditions on site-specific locations identified for mechanical logging *after* the agency decides which alternative to approve: "The objective of the condition-based management approach is to provide a higher quality treatment by accurately assessing forest stands in fine detail with professional walkthrough assessments."[53] The Forest Service apparently concludes, erroneously, that "accurate[] assess[ments]" are unnecessary for NEPA compliance. The agency's perceived "need" to put off site-specific review until after approving the project is apparently driven in part by the Forest Service's lack of common stand exam data for about 72% of the project area. The

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[48] The Center raised this issue in their Jan. 16, 2020 comments on the Rim Country Draft EIS, at 57-58.

[49] Rim Country Project Final EIS, Vol. 1, at 38.

[50] Rim Country Project Final EIS, Vol. 1, at 38-39. *See also id*., Vol. 3, at 190 ("The condition-based management approach does not assign specific treatments to specific acres, but rather assigns treatments to a set of conditions that occur on the landscape. Once these conditions are identified by an interdisciplinary team, they can use this implementation plan to identify the appropriate treatment.").

[51] Rim Country Project Final EIS, Vol. 2, Appx. D, Sec. D, at 325.

[52] Rim Country Project Final EIS, Vol. 2, Appx. D, Sec. D, at 328.

[53] Rim Country Project Final EIS, Vol. 2, Appx. D, Sec. D, at 338.

Forest Service does not explain why it could not undertake stand exams before or as part of the NEPA process.

Similarly, for watershed restoration components of the project, the Forest Service proposes to wait after NEPA compliance is complete to gather "key information" via "site reconnaissance," to "assess and inventory" values of streams and riparian areas, then to "assess … consequences" of potential restoration, and then describe and assess the "impacts of all options," including an evaluation of "options, costs and benefits," that includes considering "the consequences of taking no action."[54] This describes an ersatz NEPA process – evaluate the baseline, disclose impacts, and assess alternatives, including the 'no action' alternative – but one without the public involvement and public accountability safeguards that NEPA requires. The Forest Service can and must undertake this type of analysis. However, it cannot postpone this analysis until after the NEPA process is complete, and the public can no longer comment or seek judicial relief when the agency ignores public comment. The law requires that this analysis occur up front.

And while the Forest Service might deign to include "stakeholders" post-NEPA, the EIS does not address whether or if the broader public will be notified or engaged, and if so, how they could hold the agency accountable. For example, restoration projects "should be developed and evaluated by appropriate professionals (for example, hydrologists, geomorphologist, biologists), regardless of whom proposes them, regarding how the project will achieve progress toward restoration goals."[55] The public apparently has no role in this process, despite NEPA's mandate that the public have a role in evaluating projects, their impacts, and alternatives.

The Forest Service supports condition-based management in part on the grounds that it will allow the agency to "put the right treatment in the right place,"[56] but it will do so only after the NEPA process is done, depriving the public and the decisionmaker of any understanding of the project's site-specific, on-the-ground effects. Similarly, the agency lauds the process because it "[g]ives resource specialists flexibility to increase heterogeneity across the landscape by varying the extent, type, or intensity of treatments within the range of the assigned treatment."[57] This means, again, that neither the public nor the decision-maker can understand what logging and burning will happen where, because agency staff, post-NEPA, can "vary[]the extent, type, or intensity of treatments."[58] The process "allows specialists to choose from a variety of tools designed for specific site conditions" identified later.[59] Project design thus may not occur until

[54] Rim Country Project Final EIS, Vol. 2, Appx. D, Sec. D, at 343-44, 346-47.

[55] Rim Country Project Final EIS, Vol. 2, Appx. D, Sec. D, at 339.

[56] Rim Country Project Final EIS, Vol. 1, at 39.

[57] Rim Country Project Final EIS, Vol. 1, at 39. *See also id*. at 287 (purpose of condition-based management is to "give the desired flexibility in mechanical treatments in areas with or without other management constraints").

[58] Rim Country Project Final EIS, Vol. 1, at 39.

[59] Rim Country Project Final EIS, Vol. 1, at 39.

years or decades after the Record of Decision is signed. Thus, the "CBM" of "condition-based management" appears more akin to "carte blanche management."[60]

With the flexibility the CBM approach provides, how can the EIS disclose impacts? The Forest Service explains that CBM is used to

> Estimate the number of acres of each type of treatment proposed in each of the action alternatives. Proposed treatments, each with a defined range of basal area are analyzed toward the higher end of treatment intensity, in order to analyze the maximum potential effects from these treatments.[61]

But if the agency can "vary[] the extent, type, or intensity of treatments," the EIS cannot disclose the impacts of treatments whose extent, location, and timing are not defined.

Further, in some cases, the EIS does not even fully define the entire menu of treatments the agency could apply. In discussing aspen treatments, the Forest Service states: "Aspen restoration treatments *may* include conifer removal from within stands to reduce competition, construction of barriers to reduce browsing pressure on regeneration, prescribed fire, cutting of aspen stems or root separation to promote regeneration *as well as other active and passive restoration methods* outlined in Kitchen (2019) and Rogers (2017)."[62] In short, the Final EIS purports to disclose the impacts of treatments on aspen stands without even defining what those treatments might be. This is arbitrary and capricious.

Some treatments, even when "defined," grant the Forest Service so much discretion that the impacts on the ground could vary widely. For example, in the wildland urban interface, "the flexibility is given for more open treatments that will result in post-treatment stand densities between 30-60 ft^2/acre of basal area."[63] The bottom end of that range, 30 ft^2/acre, is akin to a clearcut; 60 ft^2/acre is a stand twice as dense. Choosing the bottom end of the range or the top would have significant differences in terms of the ultimate impacts. But the EIS doesn't evaluate these differences, or identify where the Forest Service would apply the lower or upper end of the range.

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[60] The Forest Service responds that CBM does not constitute "carte blanche" management because "Condition-based management has specific thresholds, treatment ranges, and decision points to guide implementers that were developed in a collaborative fashion with the stakeholder group." Rim Country Project Final EIS, Vol. 3, Appx. H, at 193 As discussed in more detail in the section below concerning adaptive management, many "thresholds" in the monitoring plan are either vague or non-existent.

[61] Rim Country Project Final EIS, Vol. 1, at 40. *See also* Rim Country Project Final EIS, Vol. 2, Appx. D, Sec. D, at 326 ("As a result of this condition-based management approach, some treatments assigned to individual stands may be less intense or more intense than those identified in the analysis.").

[62] Rim Country Project Final EIS, Vol. 2, Appx. D, Sec. D., at 330 (emphasis added).

[63] Rim Country Project Final EIS, Vol. 2, Appx. D, Sec. D., at 331.

Proposals to manage stands infected with dwarf mistletoe, a native parasite that has evolved with conifer forests, suffer from the same vagueness and lack of clarity concerning the specific nature of treatments that could be applied.

> In severely infected stands (80 percent or more infected), the forest health objective must also be weighed against other resource objectives. Generally, these stands would be assigned a similar treatment type to stands without a severe dwarf mistletoe infection, however, mechanical deferral may also be an option. Because of the patchy nature of dwarf mistletoe infections, it is recommended that the district silviculturist consider re-delineating a stand with high mistletoe infection and treating the healthy and infected portions with separate prescriptions or even deferring stands from mechanical treatment where a mechanical approach would not lower the level of dwarf mistletoe infection.[64]

In sum, heavily-infected stands might be managed as stands without severe infection, or mechanical treatment might be deferred, or they might be managed differently from stands with less mistletoe. Given this imprecision, the Forest Service cannot effectively evaluate the impacts of its proposal to manage for mistletoe, because the agency does not know how these stands will be managed at a specific location.

Elsewhere, the Forest Service seems to justify condition-based management on the grounds that the project area is simply too large to be evaluated in a timely manner, and so it is impossible to gather the site-specific information for the entire area that NEPA otherwise would demand.

> Due to the size and complexity of the 1.24-million-acre Rim Country project area the site-specific identification and analysis of all areas of need and the possible combinations of restoration activities is not available within the necessary timeframe for Rim Country analysis…. Complete baseline information on the condition of every acre is not currently available.[65]

But NEPA does not permit agencies to throw up their hands in the face of a lack of data. Agencies must obtain the information or provide justification for failing to do so.[66] "We chose a project area that was large" is not a valid justification. Before approving effective restoration activities, the agency must undertake a site-specific analysis pursuant to NEPA. It failed to do so here.

This does not mean that the agency cannot undertake large-scale projects. In many cases, perhaps even here, there will be advantages to agencies looking at management options across broad landscapes. But agencies cannot and need not circumvent the law to do so.

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[64] Rim Country Project Final EIS, Vol. 2, Appx. D, Sec. D., at 337.

[65] Rim Country Project Final EIS, Vol. 2, Appx. D, Sec. D., at 337.

[66] *See, e.g.*, 40 C.F.R. § 1502.22 (1978).

The Forest Service asserts that it can disclose the effects of the proposed action by assuming a sort-of worst case scenario, disclosing impacts in terms of acres:

> the Rim Country FEIS includes analysis of the potential direct, indirect, and cumulative effects from treating the number of acres proposed for each specific treatment toward the lower end of the target basal area range for that treatment. For example, the uneven-aged-moderate site treatment (UEA-Moderate) has a post-treatment basal area range of 45 to 75 square feet of basal area per acre and would be analyzed closer to the lower end of that range. See Appendix D. Implementation Plan for more information on the post-treatment basal area of proposed treatments.[67]

Treatments will be largely dictated by numerical criteria, including trees per acre and basal area.[68]

Disclosing impacts based on only *numbers of acres* across a broad landscape, and assuming that impacts can be disclosed by merely counting the acres impacted by certain treatments, as the Final EIS does, ignores that individual acres of land are not interchangeable, even when they have similar numbers and types of trees.[69] Every acre is unique. *Where* forest stands are located, and the values found there (slope, aspect, gradient, soil type, wildlife use, elevation, habitat type, etc.), and how those values and acres are juxtaposed with other lands, matter when it comes to understanding logging or burning impacts to numerous values. Site-specific data is not considered or disclosed before the agency approves any number of treatments. Further, the statement that the impacts of logging at unspecified locations at unspecified times "would be analyzed closer to the lower end of that range" of basal area does not identify what "lower range" means.

Similarly, in assessing logging impacts on Mexican spotted owls, the Final EIS modeled impacts based on:

- Acres treated and improved by habitat/vegetation type by alternative within Mexican spotted owl habitat type (protected and recovery habitats).

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[67] Rim Country Project Final EIS, Vol. 1, at 94.

[68] *See* Rim Country Project Final EIS, Vol. 3, Appx. H, at 191 ("Decision criteria for treatment assignment and treatment metrics (basal area and trees per acre) have been clarified from the draft environmental impact statement in a collaborative manner.").

[69] Similarly, capping treatments to a specific total acreage over a 20-year period does not assure that impacts will remain below a certain threshold, particularly because the Forest Service will not identify the where, when, and how of those treatments until years later. *See, e.g.,* Rim Country Project Final EIS, Vol. 3, Appx. H, at 193 (arguing that the project's Implementation Plan "would be used to track the acres of particular treatments implemented and ensure that treatments are not applied on a greater number of acres than were analyzed in the EIS.").

- Changes in basal area by tree size-classes to show effects from uneven-aged management by alternative within Mexican spotted owl habitats.

- Changes in Canopy Cover, changes to Trees Per Acre greater than 18 inches, and increases of large tree size classes greater than 18 inches diameter at breast height by alternative in Mexican spotted owl habitats.[70]

But the EIS fails to disclose the location of any of these values, so neither the public nor the decision-maker understands *where* these treated acres would be, how they would relate to each other, and to other values, or what the trees per acre greater than 18 inches DBH are in any particular protected activity center.[71]

For some values, the Forest Service can only make vague statements about aggregate impacts from the proposed, making it difficult to understand the effect of the action overall, or to compare alternatives. For example, in evaluating impacts to the rare and sensitive northern goshawk, the agency states:

> The degree of treatment intensity is highly variable, with some projects not cutting trees greater than 12 inches diameter at breast height and others looking to lower the threat of high-severity fire in northern goshawk habitat. The overall ratio of trees greater than 12 inches diameter at breast height is *likely* to increase as a result of removing smaller trees and increasing the growth and survivability of larger trees. Total basal area of pine would decrease in the short term, but because the focus is on small trees, basal area *might not substantially change*.[72]

Because treatments are "variable," and won't be chosen for years after the fact, the agency can only disclose that some impacts are "likely," without indicating the level or degree of change for some values, and concluding there might not be any change at all for other values. NEPA requires more.

The Forest Service justifies its approach in part by stating that: "The impacts of these treatments has been analyzed using a maximum implementation scenario that captures the maximum effects to all resources *even if the timing and location of treatments is not known*."[73] Again, the Forest Service here appears to take the position that the location of treatments *has no bearing on impacts.* This is not so.

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[70] Rim Country Project Final EIS, Vol. 1, at 288.

[71] *See, e.g.,* Rim Country Project Final EIS, Vol. 1, at 301-313 (identifying impacts to Mexican spotted habitat on average across the entire project area, but failing to disclose impacts to individual nesting areas).

[72] Rim Country Project Final EIS, Vol. 1, at 332. *See also id*. (indicating that snags, woody debris, and shrub layers "would increase" within northern goshawk post fledging family areas, without quantifying such increase).

[73] Rim Country Project Final EIS, Vol. 3, Appx. H, at 198 (emphasis added).

The environmental analysis and disclosure that Congress directed the agency to perform before making a decision will only occur after the fact here. The Forest Service will only identify "appropriate treatments during *implementation*," and site-specific information will only be gathered via "[p]re-implementation surveys," which could occur a decade or more after the agency's decision, which "will determine site-specific cover and habitat types and current conditions."[74] Flow charts and checklists are not a replacement for disclosing location-specific values, and disclosing how those values will be degraded (or improved) by agency action.

One final example, concerning road construction, underscores the Final EIS's need, and failure to, address site-specific impacts. The Forest Service predicts that the selected alternative may require the construction of up to 330 miles of temporary roads.[75]

The Forest Service has long acknowledged that temporary roads can have significant impacts. In its analysis of the Roadless Area Conservation Rule – which generally barred the construction of both permanent and temporary roads – the agency stated:

> Although only used for relatively short periods, temporary roads present most of the same risks posed by permanent roads, although some may be of shorter duration. Many of these roads are designed to lower standards than permanent roads, are typically not maintained to the same standards, and are associated with additional ground disturbance during their removal…. While temporary roads may be used for periods ranging up to ten years, and are then decommissioned, their short- and long-term effects can be extensive to terrestrial species and habitats.[76]

The Final EIS on the Roadless Rule also noted that "[t]he use of temporary roads may have the same long lasting and significant ecological effects as permanent roads, such as the introduction of nonnative vegetation and degradation of stream channels."[77] Temporary "[s]kid roads and trails, log landings, and similar disturbances within the [timber] sale area are the main cause of soil erosion and can contribute up to 90% of the sediment generated by timber sale activity (Patric 1976; Swift 1988)."[78] The Roadless Rule Final EIS acknowledges that temporary road

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[74] Rim Country Project Final EIS, Vol. 1, at 40. *See also id*., Vol. 3, Appx. H, at 199 ("review of treatments at a site-specific manner" will occur "once the specific action is proposed on the ground.").

[75] Rim Country Project Final EIS, Vol. 1, at 57, 133.

[76] USDA Forest Service, Final Environmental Impact Statement, Roadless Area Conservation Rule (Nov. 2000) at 3-150 excerpts attached as Ex. 1. *See also id.* at 3-30 ("temporary roads are not designed or constructed to the same standards as classified roads and are not intended to be part of the National Forest System Transportation System. The results can be a higher risk of environmental impacts over the short run."); *id.* at 3-164 (concluding that "[t]emporary roads present most of the same risks posed by permanent roads" to rare plants, "although some [impacts] may be of shorter duration.").

[77] Roadless Area Conservation Rule Final EIS (Nov. 2000) (Ex. 1) at 2-18.

[78] Roadless Area Conservation Rule Final EIS (Nov. 2000) (Ex. 1) at 3-45.

construction can cause increased risk of surface erosion and landslides, but that this varies widely and depends on local site characteristics.[79]

The Rim Country Project Final EIS agrees that temporary roads can have significant impacts. "*Depending on temporary road locations and timing of use*, these [temporary] roads can adversely affect soil productivity for the duration of the road use and for several years following decommissioning and abandonment."[80] The Final EIS also states: "Examples of management activities that would create *localized severe disturbance* include … temporary road construction."[81] Thus, the Forest Service admits that to understand the impacts of temporary road construction, one would need to know *where* temporary roads would be constructed, the duration of use, etc.

The Final EIS, however, does not address or disclose where, when, and in what sequence and spatial relationship any of the roads will be constructed as well as the nature of those road segments (*i.e.*, length, etc.), and their juxtaposition. Instead, the Final EIS explains that the impacts of "temporary roads were analyzed *qualitatively* for the action alternatives *as the location of these activities is unknown*."[82] The Final EIS alleges that this "qualitative" analysis was also a worst-case analysis: "The FEIS analyzed the maximum possible effects from activities including road use, temporary road construction."[83] The Final EIS also says generally that temporary road impacts will not be problematic because best management practices, project design elements and mitigation measures will limit their impacts, and because temporary roads will be restored when logging activities cease.[84] These excuses for failing to do more than "qualitatively" address temporary road impacts all assume that the temporary road location is irrelevant to an analysis of their impacts, which directly contradicts their admission that location matters.

Instead of disclosing the impacts of temporary roads by disclosing where such routes would be bulldozed, the Final EIS acknowledges that "[t]he exact location of temporary roads would be determined *as implementation occurs* across the project area," potentially years or two decades from now.[85] Site-specific placement of temporary roads will only occur after NEPA is complete.

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[79] Roadless Area Conservation Rule Final EIS (Nov. 2000) (Ex. 1) at 3-45.

[80] Rim Country Project Final EIS, Vol. 1, at 134 (emphasis added). *See also* Four Forest Restoration Initiative, Rim Country EIS Soils and Watershed Resource Report (Mar. 2022) at 89 (making identical statement).

[81] Rim Country Project Final EIS, Vol. 1, at 262 (emphasis added).

[82] Rim Country Project Final EIS, Vol. 1, at 371 (emphasis added). *See also id.* at 373 ("Qualitative analyses were used for components that could not be spatially defined such as temporary roads….").

[83] Rim Country Project Final EIS, Vol. 3, Appx. H, at 199.

[84] *See, e.g.,* Rim Country Project Final EIS, Vol. 3, Appx. H, at 367.

[85] Rim Country Project Final EIS, Vol. 3, Appx. H, at 343 (emphasis added).

"When analyzing the placement of temporary roads and/or road relocation, all soil conditions and attributes would be considered."[86]

The Forest Service asserts that its "leap first, look later" approach would comply with NEPA because "[f]ield reviews will review how project specifics, such as … temporary road construction … would impact resources and ensure they are within the effects analyzed."[87] But the Final EIS's effects analyzed was merely "qualitative," meaning that it will be an entirely subjective determination whether the level of impacts at any given location, let alone overall or cumulatively, were "within the effects analyzed."

Again, this is similar to the EIS struck down by the *Southeast Alaska Conservation Council* case, where the court concluded that the analysis there "creates ambiguity about the actual location, concentration, and timing of timber harvest and road construction on Prince of Wales Island. By doing so, the Project EIS fails to provide a meaningful comparison of alternatives."[88] The same is true of the Rim Country Project Final EIS.

In sum, the Forest Service's analysis of the impacts of temporary road construction, and other project actions, using condition-based management violates NEPA because it fails to disclose site-specific impacts before approving the project.

We note that NEPA provides multiple *legal* mechanisms for addressing broad scale analysis that is then refined later. CEQ regulations and guidance permit agencies to prepare programmatic NEPA documents where the agency has a need to determine impacts at a "broad or high-level."[89] Site specific NEPA can then "tier" to this analysis. And where conditions change on the ground over time, the agency may pivot promptly by preparing supplemental NEPA analysis.[90]

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[86] Rim Country Project Final EIS, Vol. 3, Appx. H, at 349.

[87] Rim Country Project Final EIS, Vol. 3, Appx. H, at 199.

[88] *Se. Alaska Conservation Council v. United States Forest Serv*., 443 F. Supp. 3d at 1014 (footnote omitted).

[89] *See* Council on Environmental Quality, Effective Use of Programmatic NEPA Reviews (Dec. 18, 2014) at 7, available at https://www.energy.gov/sites/default/files/2014/12/f19/effective_use_of_programmatic_nepa_reviews_18dec2014.pdf (last viewed Apr. 15, 2022).

[90] The 1978 NEPA regulations require the preparation of supplemental NEPA documents when, *inter alia*, "[t]here are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." 40 C.F.R. § 1502.9(c)(1)(ii) (1978). The 2020 NEPA regs contain similar language. *See* 40 C.F.R. § 1502.9(d)(1) (2020). *See also Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 371 (1989) ("[i]t would be incongruous with [NEPA's] approach to environmental protection, and with the Act's manifest concern with preventing uninformed action, for the blinders to adverse environmental effects, once unequivocally removed, to be restored prior to the completion of agency action simply because the relevant proposal has received initial approval."); *Tri-Valley CAREs v. United States DOE*, 671 F.3d 1113, 1130 (9th Cir. 2012) (applying supplementation requirement to EAs, stating that "NEPA requires supplementation of any NEPA analysis in response to 'significant

However, the invented "condition-based management" approach is sanctioned by neither law nor policy.

> *Suggested Remedy:* The Forest Service must abandon the condition-based management approach and prepare a supplemental draft EIS that discloses the timing, specific location, and impacts of defined, site-specific proposed actions. In the alternative, the Forest Service may modify the Rim Country Project EIS to make clear that it is a programmatic analysis that does not approve any activities implementing the project unless and until the Forest Service completes a subsequent, site-specific NEPA analysis informed by additional public comment.

D. The Forest Service's "Adaptive Management" Proposal Violates the Agency's NEPA Regulations.

The Final EIS makes clear that adaptive management is a key component of the Forest Service's condition-based management approach. However, the process the Forest Service proposes fails to meet the standards set by academics, the agency, or the courts for adaptive management. As noted above, Forest Service regulations require:

> An adaptive management proposal … must *clearly identify the adjustment(s) that may be made* when monitoring during project implementation *indicates that the action is not having its intended effect*, or is causing unintended and undesirable effects. The EIS must disclose not only the effect of the proposed action or alternative *but also the effect of the adjustment*.[91]

Here, however, the Forest Service admits that it has not identified all of the adjustments, and has not set thresholds or triggers for many values to determine whether adjustments should be made. and so the agency cannot disclose the effects of those adjustments. The Forest Service cannot rely on its "adaptive management plan" to disclose project impacts, so the EIS violates NEPA.

The Final EIS makes clear the central role that the "Monitoring and Adaptive Management Plan" (MAMP) plays in the Rim Country Project:

> The 4FRI Rim Country project … is a long-term forest restoration effort that is unprecedented in scale in the southwestern region of the United States. Implementation of the entire Rim Country project would take place over a period of 20 years or when activities can be funded or completed. This work would occur as the Southwest is experiencing climatic changes, including periods of extended drought and increased temperatures. These changes are lengthening the wildfire

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new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.'"); Forest Service Handbook 1909.15, Ch. 18.03 (June 22, 2012) (applying mandate to prepare supplemental NEPA documentation to environmental assessments as well as EISs), available at https://www.fs.fed.us/im/directives/fsh/1909.15/wo_1909.15_10_Environmental%20Analysis.doc (last viewed Apr. 23, 2021).

[91] 36 C.F.R. § 220.5(e)(2) (emphasis added).

> season in the Southwest, shifting plant communities, and threatening native biodiversity, among other effects …. Together with the large scale and long duration of the project, this may require modifications of planned treatments before they are implemented. These changes would be in addition to any suggested changes identified through monitoring. This MAMP is intended to guide monitoring that can help the Forest Service learn from treatment effects and respond to changing conditions.[92]

But the MAMP itself appears to be a work in progress and subject to change. The Final EIS states: "There is an expectation that indicators, metrics, methods, thresholds, adaptive management actions, and monitoring priorities *may change over the lifetime of the project*."[93] This subverts the entire purpose of adaptive management, which is to ensure that agencies identify *during the NEPA process* the thresholds that, if exceeded, will require an adjustment, and that the agency analyze and account for the impacts of that adjustment in its EIS.

Here, the Forest Service expects to *change the metrics and thresholds* by which it will measure the project's progress toward achieving its goals, *and change the adaptive management actions* that it may take if those new thresholds are exceeded. The Final EIS cannot disclose the impacts of adaptive actions that the Forest Service has not even designed yet. Unless and until the Forest Service commits to preparing a supplemental EIS to address any changes to the MAMP, it cannot rely on the Final EIS to disclose the project's impacts.

The existing monitoring plan demonstrates that it is a work in progress, with neither thresholds nor adaptive actions defined in many cases. The Final EIS states:

> Where there is sufficient information to *develop* a threshold that suggests a trend away from the desired conditions, this plan goes on to suggest *potential adaptive management actions*. The *process for developing these thresholds* is collaborative and includes Stakeholder and Forest Service input and joint fact finding. Initially, when a trigger or threshold is reached, the monitoring framework focuses on the need to assess if or how management actions have contributed to the outcomes. The Forest Service and the Multi-party Monitoring Board would collaboratively evaluate monitoring and other relevant data to establish causal relationships. *Based on the evaluation, follow-up actions will be developed*. These may include, for example, continued monitoring, collection of more refined data, a recommendation to implement the existing adaptive management action, or *development of a new recommended adaptive management action*.
>
> The 4FRI Stakeholder Group may choose to recommend adaptive management actions to the Forest Service. *Forest Service staff may also develop new adaptive*

[92] Rim Country Project Final EIS, Vol. 3, Appx. E, at 7-8.

[93] Rim Country Project Final EIS, Vol. 3, Appx. E, at 8 (emphasis added).

> *management actions internally and share these with the 4FRI Stakeholder Group for additional discussion and input*. This is a collaborative process.[94]

This passage indicates that the Forest Service has a plan to develop a plan for adaptive management, but has so far failed to develop a plan with three of the key features required by Forest Service regulations: (1) *specific thresholds*, that if exceed will trigger (2) *specific management responses* (3) whose impacts the agency *has analyzed*. Here, the Forest Service implies that it may develop such a plan, but that it has, in many case, not identified thresholds, not designated management responses, and not analyzed the impacts of those responses.

A review of some specific measures identified in the MAMP verifies the tentative and insufficient nature of that plan to meet the agency's standards for adaptive management. For example, the adaptive measure "Aquatic Habitat Suitability (Indicator 31)" focuses on the impacts of sediment on aquatic life, and sets an ill-defined, non-numerical threshold as follows: "Decrease in habitat suitability indices after accounting for non-treatment factors such as climate variability."[95] The Forest Service does not explain how the agency might "account[] for … climate variability." Further, the Forest Service describes its management response in the event this threshold is breached as: "Evaluate source of degradation and address through changes in actions."[96] "Changes in action" is not a specific management response whose impact the Forest Service can or has analyzed. The agency therefore cannot rely on adaptive management to reduce the risk of impacts to aquatic life.

Similarly, for "broad scale assessments" related to logging impacts, the Final EIS identifies "canopy openness" and "patch size" as important metrics, but states for both that "[n]o threshold has been identified for this indicator."[97] Without an identified threshold, there can be no adaptive management action. The Forest Service cannot rely on adaptive management measures to limit impacts related to these criteria.

Even where the agency identifies a specific threshold, it often fails to identify a specific adaptive management action. For example, to address concerns about logging impacts, the Forest Service sets a threshold for bare soil: "Within 5 years of treatment (mechanical and/or fire), bare soil should comprise less than 20 percent of area affected by treatment."[98] While this is a specific trigger, the Forest Service fails to identify any specific measure to respond to an exceedance of that trigger, stating only that the agency will "re-evaluate restoration treatment for modifications," without identifying what those modifications might be.[99]

Similarly, for the northern goshawk, a critically important and sensitive wildlife species in the Southwest, the Forest Service proposes what appears to be a concrete trigger: "If northern

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[94] Rim Country Project Final EIS, Vol. 3, Appx. E, at 9 (emphasis added).

[95] Rim Country Project Final EIS, Vol. 3, Appx. E, at 23-24.

[96] Rim Country Project Final EIS, Vol. 3, Appx. E, at 24.

[97] Rim Country Project Final EIS, Vol. 3, Appx. E, at 25-26.

[98] Rim Country Project Final EIS, Vol. 3, Appx. E, at 31.

[99] Rim Country Project Final EIS, Vol. 3, Appx. E, at 31.

goshawk occupancy trends show a non-zero decline (occupancy trend confidence interval or credible interval does not overlap zero) over a 5- to 10-year average at treatment and 4FRI landscape scales."[100] The adaptive management action, however, will do nothing to reverse a downward trend for goshawk because it suggests only increased monitoring.[101]

For many values identified in the MAMP, the Final EIS indicates: "No [adaptive] management action has been identified at this time."[102]

The Forest Service can change a project during implementation to address new information or unanticipated impacts.[103] But it cannot do so without preparing a supplemental NEPA analysis. The Forest Service cannot use the MAMP to avoid future NEPA analysis.

> *Suggested Remedy:* The Forest Service must abandon its reliance on adaptive management as a means of alleging such management can mitigate site-specific impacts, unless and until the agency: specifically identifies thresholds of impacts that, if exceeded will result in implementation of specific adaptive actions, and discloses the impacts of implementing those adaptive actions.

III. THE FOREST SERVICE VIOLATED NEPA BY DECLINING TO ANALYZE IN FULL THE STRATEGIC TREATMENTS FOR FIRE USE ALTERNATIVE.

A. NEPA Requires Agencies to Analyze a Range of Reasonable Alternatives that Meet the Project Purpose and Need.

To take the required "hard look" at impacts, an EIS must "study, develop, and describe" reasonable alternatives to the proposed action.[104] This alternatives analysis "is the heart of the environmental impact statement."[105] The "touchstone" for courts reviewing challenges to an EIS under NEPA "is whether an EIS's selection and discussion of alternatives fosters informed decision-making and informed public participation."[106]

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[100] Rim Country Project Final EIS, Vol. 3, Appx. E, at 54.

[101] *See* Rim Country Project Final EIS, Vol. 3, Appx. E, at 54 (Adaptive management described as "Evaluate treatments and consider increasing or focusing monitoring on area where northern goshawk is declining. Consider comparing to regional monitoring data trends. As a high-profile species, additional monitoring may be conducted even if the decline is not a statistically significant").

[102] *See* Rim Country Project Final EIS, Vol. 3, Appx. E, at 23, 26, 35, 36, 41, 42, 45, 48, 49, 50, 52, 53, 55, 56, 61, 62.

[103] *See* 40 C.F.R. § 1502.9(c).

[104] 42 U.S.C. § 4332(2)(C)(iii), (2)(E).

[105] 40 C.F.R. § 1502.14 (1978). *See also Monroe County Conservation Council v. Volpe*, 472 F.2d 693 (2d Cir. 1972) (calling the alternatives analysis the "linchpin" of the impact statement).

[106] *California v. Block,* 690 F.2d 753, 767 (9th Cir. 1982).

NEPA's implementing regulations require that an agency "[r]igorously explore and objectively evaluate *all* reasonable alternatives."[107] The agency's purpose and need statement sets the parameters for what constitutes a reasonable alternative.[108] Although agencies "enjoy[] considerable discretion" in defining their objectives and are not required to consider an unlimited number of alternatives,[109] they may not dismiss an alternative unless they have, in "good faith," found it to be "too remote, speculative, or impractical or ineffective,"[110] or not "significantly distinguishable from the alternatives already considered."[111] Further, "[t]he existence of a viable but unexamined alternative renders an environmental impact statement inadequate."[112] The agency's obligation to consider reasonable alternatives applies to citizen-proposed

[107] 40 C.F.R. § 1502.14 (emphasis added); *see also New Mexico*, 565 F.3d at 703 (quoting same); *Custer Cty. Action Ass'n v. Garvey*, 256 F.3d 1024, 1039 (10th Cir. 2001) (agencies must "rigorously explore all reasonable alternatives … and give each alternative substantial treatment in the environmental impact statement.").

[108] *See Colo. Envtl. Coal. v. Dombeck*, 185 F.3d 1162, 1174-75(10th Cir. 1999); *City of Carmel-by-the-Sea v. United States DOT*, 123 F.3d 1142, 1155 ("Project alternatives derive from an Environmental Impact Statement's "Purpose and Need" section").

[109] *City of Carmel-by-the-Sea v. United States DOT*, 123 F.3d 1142, 1155 ("The Environmental Impact Statement need not consider an infinite range of alternatives, only reasonable or feasible ones."); *Colo. Envtl. Coal. v. Salazar*, 875 F. Supp. 2d 1233, 1245 (D. Colo. 2012).

[110] *Colo. Envtl. Coal. v. Dombeck*, 185 F.3d 1162, 1174 (10th Cir. 1999) (quotation omitted).

[111] An "agency need not . . . discuss alternatives similar to alternatives actually considered, or alternatives which are infeasible, ineffective, or inconsistent with the basic policy objectives for the management of the area." *Japanese Vill., LLC v. Fed. Transit Admin.*, 843 F.3d 445, 463 (9th Cir. 2016) (citations & quotations omitted). "NEPA does not require agencies to analyze the environmental consequences of alternatives it has in good faith rejected as too remote, speculative, or impractical or ineffective." *New Mexico ex rel. Richardson v. BLM*, 565 F.3d 683, 708 (10th Cir. 2009) (quotation omitted). Moreover, "an agency need not consider an alternative unless it is significantly distinguishable from the alternatives already considered." *Id.* at 708-09. *See also Headwaters, Inc. v. Bureau of Land Mgmt.*, 914 F.2d 1174, 1181 (9th Cir. 1990) (agency is not required to undertake a "separate analysis of alternatives which are not significantly distinguishable from alternatives actually considered, or which have substantially similar consequences.").

[112] *Westlands Water Dist. v. United States DOI*, 376 F.3d 853, 868 (9th Cir. 2004) (citation omitted). *See also Friends of Yosemite Valley v. Kempthorne*, 520 F.3d 1024, 1038 (9th Cir. 2008) (citation omitted).

alternatives.[113] Courts routinely set aside agency NEPA analysis, including those by the Forest Service, where the agency arbitrarily failed to consider a reasonable alternative.[114]

Courts hold that an alternative may not be disregarded merely because it does not offer a complete solution to the problem.[115] Even if additional alternatives would not fully achieve the project's purpose and need, NEPA "does not permit the agency to eliminate from discussion or consideration a whole range of alternatives, merely because they would achieve only some of the purposes of a multipurpose project."[116] If a different action alternative "would only partly meet the goals of the project, this may allow the decision maker to conclude that meeting part of the goal with less environmental impact may be worth the tradeoff with a preferred alternative that has greater environmental impact."[117]

The courts also require that an agency adequately and explicitly explain any decision to eliminate an alternative from further study.[118]

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[113] *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin*., 538 F.3d 1172, 1217-19 (9th Cir. 2008) (finding EA deficient, in part, for failing to evaluate a specific proposal submitted by petitioner); *Colo. Envtl. Coal. v. Dombeck*, 185 F.3d 1162, 1171 (10th Cir. 1999) (agency's "[h]ard look" analysis should utilize "*public comment* and the best available scientific information") (emphasis added).

[114] *See, e.g., See High Country Conservation Advocates v. United States Forest Serv.,* 951 F.3d 1217, 1224-27 (10th Cir. 2020) (finding Forest Service NEPA analysis failed to consider a reasonable alternative concerning roadless area protection, and ordering the lower court to vacate the agency's decision); *New Mexico ex rel. Richardson v. BLM*, 565 F.3d 683 (10th Cir. 2009) (setting aside BLM's EIS concerning oil and gas leasing in the Otero Mesa area); *Wilderness Workshop v. U.S. Bureau of Land Management*, 342 F. Supp. 3d 1145 (D. Colo. 2018) (BLM's range of alternatives violated NEPA by omitting any option that would meaningfully limit oil and gas leasing and development within the planning area); *Colorado Environmental Coalition v. Salazar*, 875 F. Supp. 1233 (D. Colo. 2012) (BLM was obliged to consider an alternative requiring extraction of oil and gas to be conducted through extended-reach multilateral wells).

[115] *Natural Resources Defense Council, Inc. v. Morton*, 458 F.2d 827, 836 (D.C. Cir. 1972).

[116] *Town of Matthews v. U.S. Dep't of Transp.*, 527 F. Supp. 1055 (W.D. N.C. 1981).

[117] *North Buckhead Civic Ass'n v. Skinner*, 903 F.2d 1533, 1542 (11th Cir. 1990).

[118] *See N. Alaska Envtl. Ctr. v. Kempthorne*, 457 F.3d 969, 978 (9th Cir. 2006) ("An agency must … explain its reasoning for eliminating an alternative);*Wilderness Soc'y*, 524 F. Supp. 2d at 1309 (holding EA for agency decision to offer oil and gas leases violated NEPA because it failed to discuss the reasons for eliminating a "no surface occupancy" alternative); *Ayers v. Espy*, 873 F. Supp. 455, 468, 473 (D. Colo. 1994).

B. The Strategic Treatments for Fire Use Alternative.

The Center submitted the Strategic Treatments for Fire Use Alternative to the Forest Service for consideration as part of the Rim Country EIS in two documents in March and May of 2018.[119] The Strategic Treatments for Fire Use Alternative would utilize a modified version of the methodology developed by the Hurteau lab and used by Krofcheck and colleagues.[120] Their research has developed "prioritization strategies for implementing fuel treatments … with the goal to maximize treatment efficacy using optimal placement and prescription options under typical and extreme fire weather conditions."[121]

Their optimization model, under which the land manager would mechanically treat only the operable areas with the highest probability of mixed- and high-severity fire, was shown in multiple fire simulations to be as effective as thinning all operable acres at reducing wildfire burn severity and facilitating landscape scale low-severity fire restoration. This approach could inform landscape-scale restoration planning nationwide, as "[t]esting of strategic placement of treatments by resource managers will add data in the years ahead and provide information that can be shared and applied in other locations."[122]

Optimizing spatial prioritization of mechanical treatments reflects an evolution of fire management, placing emphasis on restoring fire as a natural process, rather than simply disrupting fire spread and protecting areas from burning.[123] The result of a strategic approach is to move away from managing for short-term outcomes and towards achievement of long-term restoration goals and objectives, consistent with calls from the scientific community to increase the use of prescribed and managed wildfires for resource benefit.[124] In a review of optimization strategies, Collins and colleagues stated: "The basic idea is that an informed deployment of

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[119] Letter of T. Schulke, Center for Biological Diversity to 4FRI Executive Board and Regional Forester (Mar. 14, 2018), attached as Ex. 2; Center for Biological Diversity, The Strategic Treatments for Fire Use Alternative (May 1, 2018), attached as Ex. 3.

[120] Krofcheck, D.J., M.D. Hurteau, R.M. Scheller, and E.L. Loudermilk. 2017. Prioritizing forest fuels treatments based on the probability of high-severity fire restores adaptive capacity in Sierran forests. Global Change Biology DOI: 10.1111/gcb.13913, attached as Ex. 4; Krofcheck, D.J., M.D. Hurteau, R.M. Scheller, and E.L. Loudermilk. 2017. Restoring surface fire stabilizes forest carbon under extreme fire weather in the Sierra Nevada. *Ecosphere* 8(1): 1-18, attached as Ex. 5.

[121] M.D. Hurteau, R.M. Scheller, and E.L. Loudermilk. June 28, 2018. Outcomes Prioritization on Fuel Treatment Placement in Extreme Fire Weather in 3 CFLRP Landscapes. At page 1. Attached as Ex. 6.

[122] Peterson, D. L. and M.C. Johnson. 2007. Science-based strategic planning for hazardous fuel treatment. *Fire Management Today* 67(3):13-18, at 15. Attached as Ex. 7.

[123] Ager, A.A., N.M. Vaillant, and A. McMahan. 2013. Restoration of fire in managed forests: a model to prioritize landscapes and analyze tradeoffs. *Ecosphere* 4(2): 1-19. Attached as Ex. 8.

[124] Stephens, S.L., B.M. Collins, E. Biber, and P.Z. Fulé. 2016. U.S. federal fire and forest policy: emphasizing resilience in dry forests. *Ecosphere* 7(11): 1-19. Attached as Ex. 9.

treatment areas, a deployment that covers only part of the landscape, can modify fire behavior for the entire landscape."[125]

We assert, as we did in our proposal, that this approach in combination with the suite of comprehensive restoration activities that are included in both action alternatives will meet the projects needs to increase forest resilience and sustainability, reduce hazard of undesirable fire effects, improve terrestrial and aquatic species habitat, improve the condition and function of streams, springs and other aquatic and hydrological resources, restore riparian vegetation, preserve cultural resources, and support sustainable forest products industries.

Reflecting advances in landscape level planning, the Strategic Treatments for Fire Use Alternative proposes a three-tier strategy, basing management area decisions on optimized treatment locations rather than just arbitrary distances from values-at-risk. Past management zone strategies have been proposed by fire ecologists to facilitate resource benefit fire in Wilderness areas, and were based on distance from the wildland-urban interface.[126] Later, those approaches were extended to non-Wilderness public lands beyond a ½ mile buffer around private land.[127] Both of those distance-dependent approaches resulted in identification of community protection zones, restoration management zones, and fire use zones. More recently, USFS and academic scientists called for a similar three-zone approach to be incorporated into National Forest Land and Resource Management Plans, with no specification of zone distances from the wildland-urban interface.[128] Conversely, the *Strategic Treatments for Fire Use Alternative* proposes that thinning treatments be prioritized in the Wildland Urban Interface, around critical infrastructure, and in areas having the highest probability of active crown fire, irrespective of proximity to human values-at-risk. Placement of such treatments would reflect existing 4FRI protections (those for stands with an abundance of large trees (SALT), Mexican spotted owl, etc.) as well as economic costs/benefits of implementation. The three tiers of the STFU Alternative are as follows:

Tier 1): Community Protection. These areas should be highest priorities for mechanical treatment, where feasible. Identification of the Community Protection Areas follows the consensus-based criteria established in the first 4FRI EIS of ½ mile around homes and critical infrastructure. Consistent with the agreements forged in the *Analysis of Small-Diameter Wood Supply in Northern Arizona* and memorialized in the first EIS, management objectives for the

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[125] Collins *et al.* 2010. Challenges and approaches in planning fuel treatments across fire-excluded forested landscapes. *Journal of Forestry* Jan/Feb 2010: 24-31, at 25. Attached as Ex. 10.

[126] Wilmer and Aplet 2005. Managing the Landscape for Fire: A Three-Zone, Landscape-Scale Fire Management Strategy. The Wilderness Society, Washington, DC.

[127] Aplet and Wilmer 2010. The potential for restoring fire-adapted ecosystems: exploring opportunities to expand the use of wildfire as a natural change agent. *Fire Management Today* 70(10): 35-39.

[128] North *et al.* 2015b. Reform forest fire management – agency incentives undermine policy effectiveness. *Science* 349(6254): 1280–1281. Attached as Ex. 11.

Community Protection Areas take precedence wherever they overlap with another management area.

Tier 2): Strategic Thinning Treatment. These areas should be the next level of priority for mechanical treatment, implementing consensus-based treatments already agreed-upon by the USFS and the 4FRI Stakeholders. The Forest Service's implementation plans, once agreement is reached on its NEPA compliance, parameters and constraints, could be utilized in these areas with the additional option of treating with fire-only if stand conditions permit, if mechanical treatment is not economically viable, and/or if on the ground conditions differ from expectations. Strategic Thinning Treatment areas would be identified through optimization analysis. An additional, secondary prioritization could be developed collaboratively to identify those stands which are the foremost priority for accelerated mechanical treatment within this zone. This analysis should include all "other projects" within the Rim Country footprint, because "Understanding where past fuel treatments and wildfires have occurred is important for prioritizing future fuel treatment."[129] Based on the 2010 synopsis competed by Collins and colleagues, a reasonable starting point may be that approximately 20% of the operable landscape could be targeted for strategically placed treatments, which would equate to approximately 250,000 acres of the Rim Country footprint. Krofcheck and colleagues optimization simulations from the Sierra Nevada resulted in approximately 8.5% of the landscape being identified for mechanical treatment. Additionally, Krofcheck et al. identified approximately 13.3% of the Santa Fe Watershed landscape, an area similar to 4FRI, was critical for mechanical treatment compared Because every landscape is different it will be important to let the process speak for itself, but if the optimization successfully locates thinning treatment priorities within those ranges, that amount of available acreage would provide 15-20 years of contracts to local industry, especially considering the challenges to implementation. These acres may be in addition to those within the *Community Protection* areas and would be determined through the optimization analysis.

Tier 3): Fire Use. Areas located outside Tier 1 and 2 are not prioritized for mechanical treatment. Instead, management prioritizes prescribed and resource benefit fire at frequencies appropriate to local fire regimes. Because progressively warmer and drier winters may be conducive to year-long prescribed fire,[130] we recommend that increased resources are made available for burning, including the use of Prescribed Fire Training Exchanges (TREX), Wildland Fire Modules, forming prescribed fire councils, and a dedicated 4FRI prescribed fire implementation team.[131]

A key benefit of this optimization approach is that it will require removing fewer trees while reducing the lion's share of risk of uncharacteristic wildfire. Doing so will benefit not only wildlife and watersheds, it will leave more carbon in the ground and in the trees themselves, thus

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[129] Vaillant and Reinhardt 2017. An evaluation of the Forest Service hazardous fuels treatment program—are we treating enough to promote resiliency or reduce hazard? *Journal of Forestry* 115(4): 300-308. At page 301. Attached at Ex. 12.

[130] Seager *et al.* 2007. Model projections of an imminent transition to a more arid climate in southwestern North America. *Science* 316:1181.

[131] Stephens *et al.* 2016. U.S. federal fire and forest policy: emphasizing resilience in dry forests. *Ecosphere* 7(11): 1-19. Attached as Ex. 9.

helping to ameliorate the climate crisis. Additionally, identifying the most critical acres to mechanically thin in order to address landscape scale unwanted fire, will increase flexibility of treatment approaches and potentially substantially decrease treatment costs over time.

The Rim Country Draft EIS recounted some of the history of the 4FRI process, stating that "[t]he 4FRI stakeholders developed a comprehensive restoration strategy for the first analysis area on the Coconino and Kaibab National Forests" and that "[t]he Forest Service used the stakeholder's landscape strategy to inform the purpose and need and proposed action for both the first 4FRI EIS and this Rim Country Project DEIS."[132] The stakeholders landscape strategy, appropriately titled the "Landscape restoration strategy for the first analysis area," set an early expectation that 4FRI would use the most advanced scientific tools available to prioritize and strategically locate treatments in order to maximize restoration value from limited resources. There has never been a serious attempt to analyze or plan for strategic placement of mechanical treatments that would accomplish these objectives.

In the spirit of that strategy, and recognizing that the Forest Service failed to prioritize treatments in the Rim Country analysis, we submitted the Strategic Treatments for Fire Use Alternative. The Final EIS confirms that the Forest Service will not use any form of strategic treatment placement or subsequent prioritization, demonstrating the need for consideration of the Strategic Treatments for Fire Use Alternative. The "focused" alternative was developed to address concerns about smoke from post mechanical treatment prescribed burning and activity fuels treatment. We are disappointed that the Forest Service has proposed mechanical treatments on the vast majority of the Rim Country landscape. Of the nearly one million acres (991,600) that the agency intends to "treat," a process that will take 20 years or more, the selected alternative would require mechanical tree removal on 873,420 acres, or 88% of the total.[133] Choosing the STFU alternative would reduce dramatically the acreage treated mechanically to within the range that we found consensus around, and still make plenty of acres available for a sustainable forest products industry.

The Final EIS states that "[t]he prioritization of treatment areas will be a part of the implementation of Rim Country, though broad recommended methodology is presented here."[134] We have not been able to identify the broad recommended methodology which is referred to in that statement. This leads us to believe that there is no coherent strategy in placing treatments on the landscape.

As we explained in the Strategic Treatments for Fire Use Alternative, mechanical treatment prioritization and strategic placement of mechanical treatments is consistent with objectives established in the Mexican spotted owl Recovery Plan,[135] the Statewide Strategy for Restoring

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[132] Rim Country Draft EIS, Vol. 1, at 23.

[133] Rim Country Project Final EIS, Vol. 1, at viii, x.

[134] Rim Country Project Final EIS, Vol. 1, at 218.

[135] USFWS 2012 Mexican Spotted Owl Recovery Plan, First Revision (*Strix occidentalis lucida*). Southwest Region U.S. Fish and Wildlife Service Albuquerque, New Mexico.

Arizona's Forests,[136] the Landscape Restoration Strategy for the First Analysis Area,[137] the Memorandum of Understanding between the 4 Forest Restoration Initiative (4FRI) Collaborative Stakeholder Group Representatives and the U.S. Forest Service,[138] the National Cohesive Wildland Fire Management Strategy,[139] and dozens of scientific articles published in peer reviewed journals and reviewed thoroughly in our Strategic Treatments for Fire Use Alternative proposal.[140]

The Landscape Restoration Strategy for the First Analysis Area stated:

> [S]patial fuel treatment patterns over a sub-set of areas across a landscape can be optimized to influence the movement of large fires and reduce the threat of severe crown fire behavior. The firescape concept lends itself to an iterative fire modeling and a Strategic Placement of Treatments (SPOTS) approach that can be modeled with Treatment Optimization Model (TOM) functions in the FlamMap fire modeling software package (Collins et al. 2010). LSWG participants anticipate that a SPOTS modeling approach could be used to model potential areas for mechanical thinning within a firescape and treatment area, which over time would facilitate the safe operational management of planned and unplanned fire ignitions.[141]

The Strategy further explained:

> When coupled with the re-establishment of landscape-scale fire processes over time, the strategic implementation of thinning and burning treatments in parts of

[136] Governor's Forest Health Council, State of Arizona. June 2007. The Statewide Strategy for Restoring Arizona's Forests. Aumack, E., T. Sisk, and J. Palumbo, editors. Published by Arizona Public Service, Phoenix, AZ.

[137] Sesnie, S.E., J. Rundall, S. Hedwall, and V. Horncastle, technical editors. October 1, 2010. Landscape restoration strategy for the first analysis area: report from the Four Forests Restoration Initiative Stakeholder Group to the USFS Planning Team. Available at https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5213936.pdf (last viewed May 2, 2022).

[138] Memorandum of Understanding between the 4 Forest Restoration Initiative (4FRI) Collaborative Stakeholder Group Representatives and the U.S. Forest Service, signed February 22, 2011.

[139] USDA and USDOI, The National Strategy: The Final Phase in the Development of the National Cohesive Wildland Fire Management Strategy (2014) https://www.forestsandrangelands.gov/strategy/thestrategy.shtml (last viewed May 2, 2022).

[140] *See* The Strategic Treatments for Fire Use Alternative (May 1, 2018) (Ex. 3).

[141] Sesnie et al (2010), at 10.

> the study area is anticipated to create forest conditions that are less prone to shifts in native plant community structure and composition.[142]

Our Strategic Treatment for Fire Use Alternative is a natural extension of the SPOTS and TOM frameworks suggested for use in 4FRI by the Landscape Restoration Strategy for the First Analysis Area, a report that was requested by the Forest Service. These frameworks have been further refined over the past decade. As we presented in our Strategic Treatments for Fire Use Alternative proposal, there is a need to maximize the benefits of scarce resources and limited industry capacity in order to harness the restorative benefits of prescribed and managed wildfires at the landscape scale. The current direction in the Rim Country Project Final EIS assumes the impossible (that is that almost 1,000,000 acres would be treated in the next decade or two), and as such fails to present a realistic strategy for accomplishing the vision of restored forests and fire regimes shared by the Center and many of our stakeholder partners.

At the core of the Strategic Treatments for Fire Use Alternative is our position that the current direction in planning, analysis and implementation of 4FRI is overly reliant on meeting structural and compositional targets, representing what is in effect a non-viable silvicultural solution to a complex ecological problem. The quest to create the ideal vegetative state across every operable acre has marginalized the overriding importance of fire-driven ecological processes.

The Center rejects a framework which assumes that complex ecosystems can be wrangled into fixed proportions of tree ages and sizes that must be repeatedly tinkered with at 30-year rotations to maintain "desired conditions." In areas where strategically located mechanical intervention is implemented, fire alone can and should be the primary future maintenance tool.[143] This notion has been deleted from the Rim Country DEIS, as we pointed out in the LTIP section of this letter.

The Center strongly supports a sustainable and appropriately scaled forest products industry that can accomplish the hard work of thinning in order to restore ecologically appropriate and low-risk fire processes. However, measuring the health of the forest on the basis of density-metrics represents a worn-out allegiance to a past industrial paradigm that is not the right scale or approach for northern Arizona's forests. This regulated-forest model defines successful restoration as growing large, defect-free trees as quickly as possible and ignores the complexity of process-centered ecosystem function.

Applying a new form of growth and density regulation, as articulated in GTR-310[144] and codified into flawed Forest Plans and desired conditions documents cannot by itself accomplish

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[142] Sesnie et al (2010), at 17.

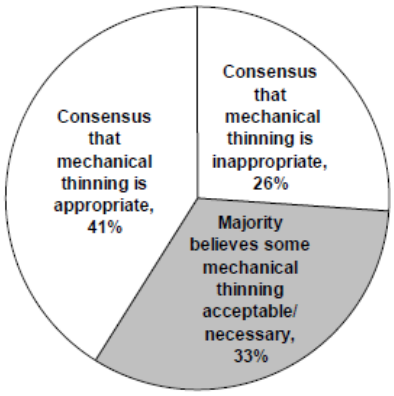
[143] North, M., B.M. Collins, and S. Stephens. 2012. Using Fire to Increase the Scale, Benefits, and Future Maintenance of Fuels Treatments. *Journal of Forestry* 110(7): 392-401. Attached as Ex. 13; and Reinhardt, E.D., R.E. Keane, D.E. Calkin, and J.D. Cohen. 2008. Objectives and considerations for wildland fuel treatment in forested ecosystems of the interior western United States. *Forest Ecology and Management* 256:1997-2006. Attached as Ex. 14.

[144] Reynolds *et al.* 2013. Restoring composition and structure in Southwestern frequent-fire forests: A science-based framework for improving ecosystem resiliency. RMRS-GTR-310.

restoration at meaningful landscape scales; only the additive effects of frequent fire can fully restore these ecosystems. Fire ecologist Dr. Pete Fulé stated that "[t]he fire-related adaptations of pine forests are associated with fire's role as a selective force going far back in evolutionary time,"[145] suggesting that restoration of fire adapted dry forests is inseparable from the influence of recurrent fire as a primary selective force.

Unfortunately, the Forest Service has neglected to take this excellent opportunity to analyze an alternative that maximizes return on limited resources by focusing thinning on the acres that truly need it the most. Restoring a forest is not an exercise in manipulating every quantifiable metric into a neat category, or alleviating any form of stress that might lead to unexpected mortality.

The Rim Country Project Final EIS offers some appropriate background to the saga that has been 4FRI. In Chapter 1, the Final EIS harkens back to the Small Diameter Wood Supply in Northern Arizona report, which "demonstrated a level of 'social agreement' on how much, where, and under what basic parameters mechanical treatment, as one restoration tool, could be used to accelerate restoration of the 2.4 million-acre initiative area."[146]



As published in the Journal of Forestry,[147] the small-diameter wood supply study achieved consensus around mechanical thinning on appropriately 41% of the 2.4 million-acre 4FRI landscape. That amounts to approximately 988,000 acres where there was consensus on the need for mechanical thinning. In the first EIS, approximately 44% of the analysis area was authorized for mechanical thinning. Now, the Rim Country Preferred Alternative makes up to 72% of the landscape available for mechanical thinning. Across both analyses, this departure equates to over 330,000 acres beyond the consensus for mechanical thinning. The chart at left is taken from the "Analysis of Small-Diameter Wood Supply in Northern Arizona."[148]

This exceedance of the consensus agreement on the extent of thinning appropriate for the landscape does not even account for the additional acres within the 4FRI footprint that have been made available to thinning under different NEPA decisions, which, based on Table 28 in the Cumulative Effects discussion, would be between approximately 200,000 acres and 240,000

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[145] Fulé 2008. Does it make sense to restore wildland fire in changing climate? *Restoration Ecology* 16(4): 526-531. At page 528. Attached as Ex. 15.

[146] Rim Country Project Final EIS, Vol. 1, at 2.

[147] Hampton et al. 2011. Estimating regional wood supply based on stakeholder consensus for forest restoration in northern Arizona. *Journal of Forestry* 109: 15-26. Attached as Ex. 16.

[148] Hampton, H.M., S.E. Sesnie, B.G. Dickson, J.M. Rundall, T.D Sisk, G.B. Snider and J.D. Bailey. 2008. Analysis of Small-Diameter Wood Supply in Northern Arizona. Forest Ecosystem Restoration Analysis Project, Center for Environmental Sciences and Education, Northern Arizona University.

acres.[149] Reasonably foreseeable activities within the cumulative effects area adds at least another 84,000 acres of mechanical thinning that is on the near-term horizon,[150] bringing the amount of the Rim Country landscape that has already been assigned, or will soon be assigned, thinning treatments since the 2008 wood supply study to as much as 324,000 acres, or more than 30% of the area where there was consensus for the need for mechanical intervention. Additionally, these values also don't include projects on the Apache National Forest, including the forthcoming Black River Restoration Project (~60,000 acres of thinning)[151], and potentially other projects.

C. The Forest Service Failed to Provide a Legitimate Basis for Declining to Analyze in Detail the Strategic Treatments for Fire Use Alternative.

The Final EIS admits that "[t]he Strategic Treatments for Fire Use Alternative meets the [project] purpose and need."[152] The agency further acknowledges that this alternative "does represent a science-based solution for maximizing limited or scarce resources and industry capacity."[153] Thus, the agency *must analyze the STFU alternative in detail unless it has some valid basis for dismissal*.[154]

Yet the Forest Service declined to analyze in detail the alternative.[155] All of the reasons the agency provided for failing to do so are arbitrary and capricious.

The agency asserts that while the STFU alternative would "meet the purpose and need," it would not do so "as well as alternative 2."[156] This is arbitrary for at least two reasons. First, the Forest Service concluded that Alternative 3 would also not meet the project purpose and need as well as Alternative 2, and yet it analyzed that alternative in detail. Second, federal courts have concluded

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[149] Rim Country Project Final EIS, Vol, 1, Table 28, at 95-100; Addition of all acres of mechanical treatments implemented on decisions approved since 2008 equals over 200,000 acres. The Final EIS admits that there are an additional 42,763 acres of mechanical thinning in the FACTS "for which NEPA decision field was unpopulated." The "NEPA decision year" in Table 28 is listed as "unknown." Rim Country Project Final EIS, Vol, 1, Table 28, at 104.

[150] Rim Country Project Final EIS, Vol. 1, at 193 (describing reasonably foreseeable thinning acreages in the Cragin Watershed Protection Project on the Coconino National Forest at over 41,000 acres, and 43,000 acres for the Haigler Fuels Analysis project).

[151] Black River Landscape Restoration Project Environmental Assessment (Sep. 2020) at 16 (Table 4), available at https://www.fs.usda.gov/project/?project=52740 (last viewed May 2, 2022).

[152] Rim Country Project Final EIS, Vol. 1, at 70.

[153] Rim Country Project Final EIS, Vol. 3, at 279.

[154] The Center raised this issue in its comments on the Draft EIS (*see* Center for Biological Diversity, Comments on Rim Country Draft EIS (Jan. 16, 2020) at 23-56), and separately presented its alternative to the agency. *See* Exs. 2 and 3, attached.

[155] Rim Country Project Final EIS at 67-70.

[156] Rim Country Project Final EIS at 68, 70.

that agencies still have a duty to analyze alternatives in detail if they partially meet the project purpose and need.[157]

The Forest Service also rejects analyzing the STFU alternative because it would involve different tradeoffs than Alternative 2, including fewer mechanical treatments (resulting in less short-term disturbance, but fewer logging jobs and potentially more fire risk).[158] While these may be reasons the Forest Service may ultimately decide not to *choose* the STFU alternative, they are not valid reasons for *failing to analyze* the alternative in detail. In fact, they show that a deep dive on the STFU alternative, when compared with Alternatives 2 and 3, could have provided a decision-maker concerned about the level of mechanical treatments to pick the STFU alternative over the others. We are unaware of court rulings permitting agencies to decline to address an alternative in detail because the impacts would differ from those of existing alternatives. Indeed, that is precisely the point of an EIS.

The Forest Service also states that "[t]he Strategic Treatments for Fire Use Alternative does not address whether other portions of alternative 2 or alternative 3 such as road decommissioning or aquatic restoration are included."[159] Here, the Forest Service misreads the Center's proposal. As we stated in comments on the Draft EIS, the STFU alternative:

> *in combination with the suite of comprehensive restoration activities that are included in both action alternatives* will meet the projects needs to increase forest resilience and sustainability, reduce hazard of undesirable fire effects, improve terrestrial and aquatic species habitat, improve the condition and function of streams, springs and other aquatic and hydrological resources, restore riparian vegetation, preserve cultural resources, and support sustainable forest products industries.[160]

The STFU alternative was meant to address the burning and thinning components of the project's purpose and need, not the additional restoration components. The Forest Service's uncharitable reading of the proposal is arbitrary.

The Forest Service also states that "mechanical restoration in Tier 3 areas would not occur" under the STFU alternative, "potentially limiting the restoration tools available during implementation. This could limit the opportunities to address issues in remote watersheds and/or improve conditions in remote streams or springs."[161] This ignores the fact that the entire thrust of

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[157] *See supra*, and *Natural Resources Defense Council, Inc. v. Morton*, 458 F.2d 827, 836 (D.C. Cir. 1972); *Town of Matthews v. U.S. Dep't of Transp.*, 527 F. Supp. 1055 (W.D. N.C. 1981); *North Buckhead Civic Ass'n v. Skinner*, 903 F.2d 1533, 1542 (11th Cir. 1990)

[158] Rim Country Project Final EIS at 68; *id*. at 70 (admitting that under the alternative "fewer mechanical treatments would result in a reduction in the presence of skid trails, landings, and piled or scattered slash which result in a moderate reduction of the scenic quality.")

[159] Rim Country Project Final EIS at 68.

[160] Center for Biological Diversity, Comments on Rim Country Draft EIS (Jan. 16, 2020) at 50.

[161] Rim Country Project Final EIS at 68.

the STFU alternative is to limit mechanical thinning to areas where such actions will have an outsized beneficial impact, and to allow the return of fire to the ecosystem to occur in Tier 3 areas where natural and prescribed fire can do the job. And again, the agency here is quibbling about the environmental tradeoffs at issue between existing alternatives and the STFU alternative, which must be lawfully addressed by analyzing in full the STFU alternative.

Similarly, the Forest Service argues that under the STFU alternative, "Tier 3 acres may be on a slower or less certain trajectory toward the natural range of variation" in some circumstance, but also admits that "[t]his slower trajectory in some portions of the landscape does align with the purpose of the Rim Country EIS; which is to move forest conditions toward the desired conditions as described in the Land Management Plans."[162] In short, the Forest Service again admits that the STFU alternative meets the purpose and need.

Finally, the Forest Service concludes that while the STFU alternative meets the project's purpose and need,

> and although it may ameliorate some conflicts over mechanical harvest, there is *some concern* that it *may* raise the risk of environmental damage resulting from an increased use of prescribed fire in areas that have not received mechanical treatments.[163]

Some concern about *potential* impacts is not a valid basis for rejecting an alternative. In fact, the Forest Service's "concerns" about the environmental trade-offs, again, only demonstrate why the agency must analyze the STFU alternative in detail to understand the tradeoffs at play.

Courts may defer to an agency decision not to analyze in detail an alternative that the agency finds to be "too remote, speculative, or impractical or ineffective,"[164] or not "significantly distinguishable from the alternatives already considered."[165] The Forest Service here makes none

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[162] Rim Country Project Final EIS at 69.

[163] Rim Country Project Final EIS at 70.

[164] *Colo. Envtl. Coal. v. Dombeck*, 185 F.3d 1162, 1174 (10th Cir. 1999) (quotation omitted).

[165] An "agency need not . . . discuss alternatives similar to alternatives actually considered, or alternatives which are infeasible, ineffective, or inconsistent with the basic policy objectives for the management of the area." *Japanese Vill., LLC v. Fed. Transit Admin.*, 843 F.3d 445, 463 (9th Cir. 2016) (citations & quotations omitted). "NEPA does not require agencies to analyze the environmental consequences of alternatives it has in good faith rejected as too remote, speculative, or impractical or ineffective." *New Mexico ex rel. Richardson v. BLM*, 565 F.3d 683, 708 (10th Cir. 2009) (quotation omitted). Moreover, "an agency need not consider an alternative unless it is significantly distinguishable from the alternatives already considered." *Id.* at 708-09. *See also Headwaters, Inc. v. Bureau of Land Mgmt.*, 914 F.2d 1174, 1181 (9th Cir. 1990) (agency is not required to undertake a "separate analysis of alternatives which are not significantly distinguishable from alternatives actually considered, or which have substantially similar consequences.").

of these assertions. "Some concerns" about potential risks are simply not a valid basis for failing to analyze in detail an alternative that meets the purpose and need.

> *Suggested Remedy*: The Forest Service should prepare a supplemental draft EIS that analyzes in detail the Strategic Treatments for Fire Use alternative. Alternatively, the Forest Service can commit to optimize treatments as part of the Rim Country Project.

IV. THE RIM COUNTRY PROJECT FAILS TO ENSURE PROTECTION OF MEXICAN SPOTTED OWL.

In the Rim Country Project are there are 214 designated Mexican Spotted Owl ("MSO) Protected Activity Centers ("PACs") on 120,522 acres within PAC boundaries, 219,657 acres of recovery habitat, and 266,275 acres of Critical Habitat.[166] The proposed action is to mechanically thin and burn approximately 14,641 PAC acres.[167]

In general, the Final EIS, its supporting documents and Biological Opinion fail to fulfill the commitments resulting from the 2020 regional MSO Leadership Forum Workshop.[168] The Biological Opinion itself is legally deficient.

Specifically, with respect to Rim Country, the MSO Leadership Forum stated that (1) "[i]t is not clear whether or not this project will be managed with the minimum Recovery Plan recommendations for PACs canopy, and Recovery Nest/Roost habitat % Basal Area by large trees or density of large trees … It is not clear whether or not the project will provide for five years post treatment monitoring. … The Workshop outcome is that the [Rim Country] project analysis needs to be completed, integrating the outcomes of the Workshop."; (2) "[t]est the products from the systemic issues resolution workshop(s) on projects in the planning stage, including 4FRI Rim Country."; and (3) "[s]ystemic issues need to be resolved before additional major projects are awarded, including … 4FRI Rim Country."[169]

The Executive Summary of the Forum included:

> "1. There is a disconnect between the broader scope public documents readily available for review and what actually happens on the ground during implementation.

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[166] The Center raised issues concerning the impact of the Rim Country Project on management of the Mexican spotted owl in comments on scoping and on the Draft EIS. *See* Center Draft EIS comments at 76-77; comments of T. Schulke, Center for Biological Diversity, Rim Country, Comments on Scoping (Aug. 11, 2016), at 13-17.

[167] *See* Biological Opinion, at 66.

[168] *See* "MSO Leadership Forum Workgroup June 17 & 26, 2020 Workshop Notes," (July 7, 2020), attached as Ex. 17.

[169] MSO Workshop Notes (Ex. 17) at 4, 5, 18.

2. Site specific MSO field data necessary to select Recovery Plan recommended treatments is generally not available prior to NEPA [National Environmental Policy Act] analyses. …

5. Generally, the NEPA process does not analyze actual stand treatments for the MSO projects but broad ranges of allowable treatments. Actual treatments are decided during field trips prior to project implementation. …

8. Monitoring as a reasonable and prudent measure often lacks clarity and specificity at the NEPA stage and the final plan is not always appended to the BO.

9. There is no clear tool or method in place to account for the cumulative effect across various projects' actual treatments, and to reconcile the distribution of treatments along the spectrum of intensities (including no treatment) within the landscape, as recommended in the Recovery Plan, to establish an environmental baseline among neighboring projects.

10. The current management practice of relying on post NEPA field trips by a few select individuals to decide upon actual treatments is not scalable to landscape scale restoration.

11. Current MSO management appears to be a precursor of the proposed general "Condition Based Management" (CBM) in the on-going NEPA Revision. Lessons learned in the MSO Workshop are likely applicable to CBM at-large, as relates to communicating to the public the treatments and monitoring that are actually implemented. …

14. A Recovery Plan clarification is needed, including:

I. Clarification of canopy recommendations within PACs, nest cores and recovery nest/roost habitat, in Pine Oak and Mixed Conifers, including stands data required to evaluate whether adequate canopy cover is provided after treatment, and after fire.

II. Clarification that minimum requirements are not targets, and that the intent of the Recovery Plan is not to have every project acre at minimum levels, and that in the areas where the number of large trees per acres exceeds the recommended minimum, large tree should not be removed just to meet the recommended minimum." [170]

Specifically, with respect to NEPA studies and Biological Opinions, among the concerns identified by the MSO Leadership Forum under "Systemic Issues" included:

- "How do we communicate what is actually happening on the ground? It could be useful to have qualifying statements in NEPA to clarify that what is being proposed may or may

[170] MSO Workshop Notes (Ex. 17) at 2-4.

not be implemented. It is extremely confusing right now what is being done or not, within the limits of the NEPA documents."[171]

- "The NEPA prescriptions quality control and decision-making takes place at post NEPA field-trip level. This method is likely not scalable across AZ and NM if/when both States ramp up to landscape scale restoration. Shaula [Hedwall of USFWS] will not be able to visit every project in both States, especially when AZ does 50,000 acres/year and NM ramps up."[172]

- "There is danger in relying overly on imputed data. A lot of the MSO habitat resides on Northern aspects, which may not reflect data from southern aspects as represented through nearest neighbor imputation processes. Conditions on the ground may be very different from the imputation. Field survey data is required early in the planning process."[173]

- "Can we use it [LIDAR] to collect field data relevant to prescription decisions?"[174]

- "…the current MSO challenges likely exemplify issues to come, NEPA-wide, when CBM [Condition Based Management] gets rolled out at full scale."[175]

- "NEPA seems to not be done thoroughly on some projects (e.g. Hassayampa). It seems to be more a perfunctory analysis than an actual treatments analysis. There is apparently an expectation that treatments will actually be decided during/following on the ground data collection, Therefore, NEPA rigor is not required. USFWS willingness to visit every project to fix it may be acting as an enabler of insufficient NEPA and poor data on stand conditions in MSO PACs and Nest Roost Recovery habitat."[176]

- "How do we do the accounting for the environmental baseline so that the public can feel comfortable proceeding with these projects and in general? Each BO is a jeopardy analysis. None of the BO ever gets to jeopardy but the question is whether aggregated BOs get to jeopardy when cumulating all the projects across the Region. There are 54,000 acres of PAC, recovery nest roost habitat scheduled to be treated across R3. There is a need to evaluate and disclose how cumulated projects are not creating jeopardy."[177]

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[171] *Id*. at 21.

[172] *Id*. at 21.

[173] *Id*. at 21.

[174] *Id*. at 22.

[175] *Id*. at 22.

[176] *Id*. at 22.

[177] *Id*. at 22.

- "Although the Recovery Plan allows treatments in PACs and nest roost, the Recovery Plan recommends treating outside PAC and nest/roost habitat first to reduce fire risk. Protection can also be accomplished by treatments strategically located around MSO acres."[178]

- "Better quality data is needed earlier in the planning process for stand conditions within PACs and Nest Roost recovery habitat and it should be publicly accessible. This will lead to more transparency and better planning during NEPA process."[179]

- "Science is emerging in recent literature regarding the effectiveness, or lack thereof, of mechanical treatments in MSO habitat. A Workshop is needed to review this science and its applicability to projects in the Region."[180]

And to resolve "Systemic Issues," the MSO Leadership Forum recommended to "[d]evelop a standardized template for project development that includes making readily available to the public:"

> "a. Current forest data (e.g., current stand exams, LiDAR or other remote sensing tools);
> b. Modeling tables of pre and post treatment forest structure (e.g., trees >17.9 in DBH, snags), and treatments effects including prescribed fire effects;
> c. Use of easy to understand metrics such as TPA, % large tree per acre, % of BA, canopy cover, etc.;
> d. Specific treatments analyzed in the NEPA;
> e. Biological Assessment (BA); …
> h. Pre and post Monitoring Plan appended to BOs; …"; and,
>
> "Test the products from the systemic issues resolution workshop(s) on projects in the planning stage, including 4FRI Rim Country."[181]

We object to the fact that the Final EIS and accompanying documents, and the draft ROD fail to include many components critical to comply with NEPA, to respect the MSO Leadership Forum concerns, and most importantly to allow the Public to understand exactly how the Rim Country project will affect our Public Lands and impact MSO.

Our specific objections follow:

1. The FEIS fails to include actual information about the number of trees and canopy cover in each PAC and in Recovery Nest/Roost Habitat. We raised this point in the MSO Leadership Forum (pages 1, 2, 3, 5, 6, 15, 20, 21, 23, and 26). In addition, the number of trees and canopy cover that will be left after treatment via cutting and burning are not included in the FEIS or

[178] *Id*. at 23.

[179] *Id*. at 23.

[180] *Id*. at 23.

[181] *Id*. at 26.

supporting documents. The FEIS and its accompanying documents do seem to commit to not cutting > 18 trees within PACs and Recovery Nest/Roost Habitat; however, it is not clear how much canopy will remain in each PAC.

> *Suggested Remedy*: The Forest Service must provide actual information as to the number of each sized tree and the canopy cover in each PAC before and after treatment.

2. The BAs and canopy cover in mixed-conifer and the BA in pine oak in MSO protected habitat will be treated to 126 BA in mixed conifer, 116 in pine oak and with average canopy cover in mixed conifer to 60% according to Table 36 of the Terrestrial Wildlife Report (Key Habitat Variables in PACs via FSV). These treatments are at or near the minimum recommendations of the Recovery Plan which recommends 120 basal area (BA) in mixed conifer and 110 BA in pine oak in the Upper Gila Mountains and Basin and Range West Critical Habitat Units (Recovery Plan Table C.3) and 60% canopy in mixed conifer (Recovery Plan pages 182, 276)

> *Suggested Remedy*: The Forest Service must increase the post treatment BAs and canopy cover to levels that are not so close to the minimums recommended by the Recovery Plan and consistent with the Recovery Plan's warning (page 278) and the MSO Leadership Forum's concerns (pages 4 and 22) that the Forest Service is using the minimums recommended by the Recovery Plan as a target.

3. The percentage of basal area in PACs from trees 12"-18" according to Table 37 of the Terrestrial Wildlife Report (Cover Type for Class Sizes via FSV) will be reduced from an existing BA of 46 (29%) to 36 (28%) in mixed conifer. This is lower than the recommended >30% by the Recovery Plan (Table C.3).

> *Suggested Remedy*: The Forest Service must increase the post treatment BA percentage of 12"-18" trees BAs to levels that are not so close to the minimums recommended by the Recovery Plan and consistent with the Recovery Plan's warning (page 278) and the MSO Leadership Forum's concerns (pages 4 and 22) that the Forest Service is using the minimums recommended by the Recovery Plan as a target.

4. In the 111,539 acres of Foraging/Non-Breeding Habitat more than 100,000 trees (one per acre) 18-24 inches in diameter will be cut according to Table 42 of the Terrestrial Wildlife Report in spite of the fact that (1) the Recovery Plan (Table C.1) says for "Recovery Foraging/Non-breeding Habitat… Retain key owl habitat elements (e.g., large trees…) and (2) the Recovery Plan on page 269 says, "Design and implement management treatments within Forested Recovery Foraging/Non-breeding habitat so that … trees (>46 cm [18 in] dbh) are retained."

There is no information in the Rim Country Project Final EIS or supporting documents that identifies the areas from where these trees will be taken nor any rationale for why they will be taken.

This is particularly important with respect to the proposed cable logging in MSO habitat where, though no cable logging is supposed to occur in PACs (WL016, Appendix F), cable logging is

being approved in 5,045 acres of Nest/Roost Recovery Habitat and in 25,941 acres in Recovery Foraging/Non-breeding habitat (Biological Opinion, pages 66-67).

The Rim Country Project Final EIS and supporting documents do not identify where large trees are located and how many large trees are in these areas. A statement that "Trees greater than 24 inches dbh would not be cut in recovery habitat (including nest/roost replacement habitat), except where necessary for cable corridor locations" (Biological Opinion, pages 68-69) further highlights these concerns.

> *Suggested Remedy*: The Forest Service must follow the intent of the Recovery Plan and do not cut trees >18" in Foraging/Non-Breeding Habitat and clearly identify the number and location of the large trees within potentially affected MSO habitat.

5. The Rim Country Project Final EIS and supporting documents provide fire modeling; however, they fail to provide maps of and an analysis of the risk to PACs, Nest/Roost Replacement Habitat, and Foraging/Non-Breeding Habitat.

> *Suggested Remedy*: The Forest Service must provide maps, an analysis and assurance consistent with the Recovery Plan (pages 75, 286 and 287) and the MSO Leadership Forum recommendations (page 23) to prioritize treatments of PACs and Nest/Roost Replacement Habitat to reduce fire risk, especially where protection can be accomplished by treatments strategically located around MSO acres.

6. The Rim Country Project Final EIS and supporting documents fail to provide for a specific monitoring plan for MSO and treated MSO habitat for any finite post-treatment period of time. This ignores the concerns of of the MSO Leadership Forum (pages 2, 3, 5, 6, 7, 9, 12, 13, 14, 16, 19, 24, 25, and 26). The fact that the Biological Opinion fails to provide such a specific monitoring plan also violates the law and legal precedent. *See Ctr. for Biological Diversity v. Rumsfeld*, 198 F. Supp. 2d 1139, 1153-54 (D. Ariz. 2002).

> *Suggested Remedy*: The Forest Service must provide for a specific monitoring plan that will be followed for a specific post-treatment period of time.

7. The Forest Service is legally responsible for compliance with the Endangered Species Act. Missing from the FEIS, its accompanying documents and the Biological Opinion are scientific and legal provisions essential to avoid jeopardizing MSO. Essential to avoiding jeopardy are (1) the provision of a regionwide habitat monitoring program, (2) an analysis of the environmental baseline and its inclusion in a jeopardy analysis,[182] and (3) a project specific and

[182] The Recovery Plan (at page VII) states: "To accomplish the recovery of the Mexican spotted owl, the recovery strategy has five key elements designed to conserve the subspecies throughout its range: 1) protecting existing populations; 2) managing for habitat into the future; 3) managing threats; 4) monitoring population and habitat; and, 5) building partnerships to facilitate recovery; … Recovery Criteria: Two criteria (addressing Listing Factors A, C, and E) must be met before the Mexican spotted owl can be delisted: … 2. *Indicators of habitat conditions (key habitat variables) are stable or improving for 10 years in roosting and nesting habitat* (for key habitat

variables, see Table C.2 or C.3 in Appendix C). Habitat monitoring should be conducted concurrently with owl occupancy monitoring."

As the judge in the *WildEarth Guardians* 2019 case reinforced, "To encourage population growth, the Recovery Team created an "adaptive management" plan. USFS 133-34. FWS described adaptive management as a flexible process that would be refined as data was received through implementation of the management model and monitoring. USFS 9934 SUP1. Visually, the adaptive management plan was pictured as a three-legged stool, supported equally by population monitoring, habitat monitoring, and management recommendations. USFS 134-35. Members of the recovery team stated, "[l]ike a stool, if any one of the legs were removed, the recovery plan would fail." *WildEarth Guardians v. United States Fish & Wildlife Serv.*, 416 F. Supp. 3d 909, 921(D. Az. 2019).

And, "[f]inally, FWS argues that the range-wide monitoring is for delisting—not for the jeopardy analysis. However, the two are interconnected because jeopardy must consider recovery, recovery must be geared towards eventual delisting, and delisting is dependent upon range-wide monitoring. FWS concluded the Forest Plan did not jeopardize the MSO because it was protective to MSO habitat and because there were increased PACs. But, as noted above, these are not sufficient indicators of recovery. The BiOps simply do not provide a route to recovery or a way to accurately assess it. The no jeopardy determination is unsupported, arbitrary, and capricious because the finding failed to account for recovery of the MSO." *WildEarth Guardians v. United States Fish & Wildlife Serv.*, 416 F. Supp. 3d at 932.

Yet no regionwide habitat monitoring is taking place.

Numerous courts have rejected Biological Opinions that failed to meaningfully evaluate and explain why a proposed action will not impair a species' recovery. *See, e.g.*, *Wild Fish Conservancy v. Salazar*, 628 F.3d 527, 513 (9th Cir. 2010) (finding jeopardy analysis inadequate in part because it did not identify the recovery "tipping point" and whether that threshold would be crossed by the proposed action); *Nat'l Wildlife Fed'n*, 524 F.3d at 936 (finding jeopardy analysis unlawful for failing to address recovery of the listed species or the in-river survival levels necessary to support recovery); *S. Yuba River Citizens League v. Nat'l Marine Fisheries Serv.*, 723 F. Supp. 2d 1247, 1266-67, 1275 (E.D. Cal. 2010) (finding jeopardy analysis inadequate because it did not "discuss (through some method) the magnitude of the stressors' impact, the populations' ability to tolerate this impact, and the reason why any decline will not reduce the overall likelihood of survival *or recovery*" (emphasis added)); *Pac. Coast Fed'n of Fishermen's Ass'ns v. Gutierrez*, 606 F. Supp. 2d 1122, 1171 (E.D. Cal. 2008) (finding recovery analysis inadequate because "NMFS conclusory [sic] mentions but does not analyze the effects of Project actions on the recovery of the springrun Chinook species"); *Nat. Res. Def. Council v. Rodgers*, 381 F. Supp. 2d 1212, 1233-34 (E.D. Cal. 2005) (finding recovery analysis arbitrary that generically discussed recovery but failed to analyze impacts to the species' critical habitat).

The statute, regulations, and caselaw make clear that to satisfy its mandatory duty to ensure against jeopardy, FWS must demonstrate that the effects of a proposed action will not impair the species' chances of recovery. Whether an action pushes a species across the jeopardy threshold depends on both the magnitude of the species' pre-existing status and the action's additional impacts. *Nat'l Wildlife Fed'n*, 524 F.3d at 936 (holding that consulting agencies must consider whether harm from a proposed action, when added to baseline conditions, threatens to "tip[]"

regionwide experimental monitoring program documenting the status of MSO comparatively in both treated and untreated areas especially where mechanical thinning is involved and so little is known about its effects on MSO (see MSO Leadership Forum pages 4, 5, 21, 23 and 27).

With respect to this last provision, the Forest Service's April 10, 2015 response to our 4FRI 1 objections resolution stated: "There is mutual recognition of the need to evaluate the impacts of vegetation treatments on Mexican Spotted Owl (MSO) and its habitat at a broad scale.… We have agreed to convene a working group that will design such a study."[183] But this has never happened.

> *Suggested Remedy*: The Forest Service must: (1) finalize a regionwide habitat monitoring plan by December 31, 2022.; (2) finalize and initiate a project wide monitoring plan whereby the status of MSO is being observed and recorded and is being compared between treated and untreated MSO habitat within the Rim Country project footprint for a significant identified period of time prior to signing of the ROD, and (3) finalize and initiate a regionwide monitoring plan by December 31, 2022 whereby the status of MSO is being observed and recorded and is being compared between treated and untreated MSO habitat regionwide as well.

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listed species "too far into danger," thereby "reduc[ing] the odds of success for future recovery planning"). Thus, for the jeopardy analysis to be meaningful, FWS must first determine whether the species' survival and recovery are already compromised before it can conclude that the species can withstand additional harm—i.e., FWS must first determine the current status of the species in relation to "independent or baseline harms." *See id.* at 929-31. Only if FWS concludes that the species' baseline condition does not threaten its survival and recovery may the agency proceed to determine whether the additional effects of the proposed action will result in jeopardy. *Id.*

Absent an objective metric for determining the point at which recovery (or survival) is compromised, the duty to insure against jeopardy becomes a meaningless exercise. Accordingly, to satisfy its obligations under the ESA, FWS "must logically know the rough survival and recovery needs (i.e., 'tipping points')" to determine whether the action will cause the species to reach that tipping point and cross the threshold into jeopardy. *Nat'l Wildlife Fed'n*, 524 F.3d at 936. Indeed, unless FWS "knows roughly at what point survival and recovery will be placed at risk," it is impossible for FWS to "conclude that no harm will result from 'significant' impairments to habitat that is already severely degraded." *Id.* at 936. Even projects with seemingly minor impacts may jeopardize a species whose baseline status is severely degraded. A tipping point analysis thus prevents "a 'death by a thousand pinpricks' by determining if an agency action with a small overall effect will push a species across the line to eventual extinction, or past a point from which recovery is impossible." *Ctr. for Biological Diversity v. U.S. Fish & Wildlife Serv.*, 441 F. Supp. 3d 843, 857 (D. Ariz. 2020); *see also Oceana v. Pritzker*, 75 F. Supp. 3d 469, 491 (D.D.C. 2014) (where "baseline conditions are already dire, then even a small additional impact due to [the proposed action] may require a jeopardy determination").

[183] C. Joyner, U.S. Forest Service to J. Lininger, Center for Biological Diversity (April 10, 2015), attached as Ex. 18.

V. THE FOREST SERVICE FAILS TO TAKE A HARD LOOK AT IMPACTS TO, OR TO ENSURE PROTECTION OF, INVENTORIED ROADLESS AREAS.

The national Roadless Area Conservation Rule, adopted in 2001, generally prohibits the cutting, sale or removal of timber from National Forest Service inventoried roadless areas in Arizona.[184]

The Rim Country Project Draft EIS contained virtually no mention of potential treatments within, or impacts, to inventoried roadless areas. After commenters raised questions on this issue, the Forest Service added an entirely new section in the Final EIS addressing impacts to roadless areas, and completed a specialist report on the issue.[185] The Forest Service asserts that the cutting and removal of forest across more than 11 square miles of roadless lands would be consistent with the Roadless Rule, citing 36 C.F.R. § 294.13(b)(1)(ii).[186]

Inventoried Roadless Areas (IRA) are obviously very important to the American public and are a high priority for Center members. These areas, which tend to be less disturbed and, in many cases, defacto wilderness areas, need to be treated with additional care and shouldn't be treated as part of the general forest matrix. The proposed mechanical treatments in the Rim Country draft FEIS treat IRA's as such, subjected to mechanical treatments for as long as 20 years. These areas are mostly steep canyons or steep forested areas adjacent to designated wilderness. They almost all contain listed species or their habitat. All of the IRA's display high scenic values. Clearly, these IRA's should not be treated in the same way more disturbed areas in the Rim Country landscape.

A. Proposed Actions within Roadless Areas

The Final EIS acknowledges that the preferred alternative would approve the cutting, sale, or removal of timber (via mechanical thinning) across nearly 7,300 acres of the 8 inventoried roadless areas totaling 17,290 acres within the project area.[187]

The Final EIS states that:

- Mechanical logging in roadless areas would constitute "restoration activities" and thinning "would focus on cutting smaller diameter live, standing trees (5 to 16 inches)," although larger trees could be removed to address "threats to human health and safety, and those rare circumstances where the removal of an old tree is necessary in order to prevent additional habitat degradation that would be caused by forest thinning and burning operations…. Large post-settlement trees … would be retained with the exceptions outlined in the Rim Country Large Tree Implementation Plan (Appendix D of

[184] 36 C.F.R. § 294.13(a), published at 66 Fed. Reg. 3244 (Jan. 12, 2001) ("Timber may not be cut, sold, or removed in inventoried roadless areas of the National Forest System, except as provided in paragraph (b) of this section.").

[185] Rim Country Project Final EIS, Vol. 2, at 143-173; Four Forest Restoration Initiative, Rim Country EIS Inventoried Roadless Area Specialist Report (Mar. 2022).

[186] Rim Country Project Final EIS, Vol. 2, at 143.

[187] Rim Country Project Final EIS, Vol. 2, at 143, 172.

the FEIS) such as encroachment within seeps and springs, wet meadows, grasslands, aspen stands, conifers encroaching into riparian areas, etc."[188]

- No temporary roads or road rebuilding/reconstruction would occur within inventoried roadless areas (IRAs).

- No in-woods processing sites or rock pit expansion would occur in IRAs.

- No cable operations would occur within IRAs.

- Logging on slopes greater than 40% could occur.

- The Forest Service "would use a condition-based management approach for mechanical … treatments within IRAs," meaning that the agency has not decided where or when what treatments (including mechanical thinning) could occur because it lacks site-specific data about stand conditions and other values within IRAs.[189] Despite this fact, the Inventoried Roadless Area specialist report contains maps purporting to identify where within each roadless area different types of treatments (including thinning) would be implemented.[190]

The Final EIS also asserts that "[t]he cutting of timber for removal is expected to be infrequent because operations in the IRAs would be of limited scope and duration intermittently over a 20-year or more time span," and that "it is expected" that further treatments would "would not be necessary" because Rim Country Project logging "would put forested stands on a trajectory toward the natural range of variation."[191]

B. Legal Framework: The Roadless Rule

The Roadless Rule provides that, in general, "[t]imber may not be cut, sold, or removed in inventoried roadless areas of the National Forest System."[192] One exception to this general provision states:

> 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 § 294.11.

[188] Rim Country Project Final EIS, Vol. 2, at 164-165.

[189] Rim Country Project Final EIS, Vol. 2, at 161-162.

[190] Rim Country EIS Inventoried Roadless Area Specialist Report at Appendix A.

[191] Rim Country Project Final EIS, Vol. 2, at 161.

[192] 36 C.F.R. § 294.13(a).

(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.[193]

The Roadless Rule defines roadless area characteristics as:

> Resources or features that are often present in and characterize inventoried roadless areas, 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.[194]

The rule requires a highly site-specific analysis, given the regulation's emphasis on "*locally identified* unique characteristics."[195]

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

[193] 36 C.F.R. § 294.13(b)(1) (emphasis added).

[194] 36 C.F.R. § 294.11.

[195] *Id.* (emphasis added).

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*….

[A]ll 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 § 294.11.[196] ….

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.[197]

In adopting the Roadless Rule, the Forest Service thus anticipated that logging in IRAs under this specific exception would only occur following a project-level NEPA analysis that evaluated specific conditions at the stand level.

C. The Forest Service Fails to Provide Stand-Specific Data Concerning Stand Conditions or Logging Treatments.

The Final EIS and Roadless Area Specialist Report fail to disclose the necessary stand-specific data and analysis required by the Roadless Rule, as described in the Rule's preamble, as well as required by NEPA.[198]

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[196] Forest Service, Roadless Area Conservation Rule, 66 Fed. Reg. 3244, 3257 (Jan. 12, 2001) (emphasis added).

[197] *Id*. at 3258 (emphasis added).

[198] Although the Center did not specifically mention roadless areas in its January 2020 comments, the Rim Country Project Draft EIS failed to address the issue at all. The Forest Service added the entirety of analysis of Inventoried Roadless Areas to the Final EIS for the first time, and so the Center could not have commented on that analysis. Because the Forest Service's analysis of roadless areas is "based on new information that arose after the opportunities for comment," the Center's arguments are properly presented.

While the Forest Service proposes to approve mechanical thinning and other tree removal within specific parts of eight roadless areas, the Forest Service describes IRAs with a broad brush. The Forest Service describes "roadless areas" as a whole, apparently across all of the three forests, and without addressing conditions within each area. For example, the agency states:

> Most of these [inventoried roadless] areas have not experienced their normal fire regimes in over 100 years, missing many fire intervals….
>
> Due to a history of fire suppression and a lack of active management, acres within IRAs are denser than their surrounding areas. Compared to the reference conditions and desired conditions for the project area (20 to 90 square feet of basal area), density in IRAs is extremely high (125 to 200 square feet of basal area), generally exceeding the areas outside for the IRAs.[199]

Here, it is unclear whether the Forest Service data and history relates to IRAs impacted by the project, all IRAs on the three forests, or those *specific parts* of 8 IRAs that lie the project area. Of the eight IRAs to be "treated" by the project, five IRAs contain acreage outside the project.[200] The Forest Service's citation to "IRAs" is thus vague and unhelpful.

Similarly, the Final EIS presents graphs that "portray the fire hazard index and potential fire type by alternative for each of the IRAs."[201] It is again unclear whether this index relates to the entirety of each IRA, or to that portion that includes stands that the agency is proposing to treat.

Further, the Forest Service makes clear that the agency does not know which treatments it will apply to which stands, because, as with the rest of the project, "[t]he Rim Country Project would use a condition-based management approach for mechanical and aquatic treatments within IRAs."[202] Because the agency uses condition-based management, it is impossible for the Forest Service to comply with the Roadless Rule's expectation that the agency will analyze and disclose the stand-specific impacts of treatments based on stand specific reviews disclosed in a NEPA document.[203]

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[199] Rim Country Project Final EIS, Vol. 2, at 143; Roadless Area Specialist Report at 1. *See also* Roadless Area Specialist Report, Appx. B (Regional Forester Briefing Paper) at 17 (stating generally that "Stands within IRAs are far outside the natural range of variation in terms of composition, structure, basal area, trees per acre, for the cover types included,") but failing to provide data for individual stands); *id*. at 18 (stating generally that "Compared to the reference conditions and desired conditions for the project area (20-90 square feet of basal area), density in IRAs is extremely high (125-200 square feet of basal area), generally exceeding the areas outside for the IRAs," but failing to explain which subset of IRAs on the three forests at issue the numbers address).

[200] Rim Country Project Final EIS, Vol. 2, at 145-159; Roadless Area Specialist Report at 3-18.

[201] Rim Country Project Final EIS, Vol. 2, at 163; Roadless Area Specialist Report at 20.

[202] Rim Country Project Final EIS, Vol. 2, at 162; Roadless Area Specialist Report at 19.

[203] The Final EIS and Roadless Specialist Report contain maps displaying where mechanical treatments would occur, and the latter document even calculates the total volume of timber to be

The analysis of the impacts of treatments on roadless area characteristics contains virtually no analysis specific to individual IRAs, let alone to stands within specific stands within IRAs.[204] The Final EIS contains largely generic statements about impacts – for example "[t]he presence of skid trails, landings, or scattered slash would result in a moderate reduction of the scenic quality"[205] – without providing any site-specific information about where in any specific IRAs those damaging activities would occur and impact specific stands.

The need for stand specific reviews is demonstrated by the fact that despite the Forest Service's statement about how overstocked all IRAs are, proposed treatments across three square miles of the Jacks Canyon IRA (including hundreds of acres of mechanical treatments) will have virtually no impact on the IRA's Fire Hazard Index or the Potential Fire Type.[206]

> *Suggested Remedy*: The Forest Service should prepare a supplemental draft EIS that complies with the Roadless Rule and NEPA by evaluating IRAs proposed for treatment on a stand-specific basis, and discloses the impacts of alternative treatments on the values of each stand.

D. The Forest Service Fails to Ensure Protection of Soils and Other Resources on Steep Slopes.

Many of the IRAs at issue include steep canyons, where logging with mechanized equipment is more likely to damage sensitive soils, and threaten other values. For example:

- the Chevelon Canyon IRA largely includes land within or adjacent to its namesake canyon.[207] "The primary scenic features are the primitive, steep-walled, and twisting canyons, with cliffs rising as high as 300 feet above deep pools in the stream channels."[208]

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removed down to the nearest cubic foot. Roadless Area Specialist Report, Appx. A (Treatment Maps and Tables); Roadless Area Specialist Report, Appx. B (Regional Forester Briefing Paper) at 3 (presenting CCF estimate). But the fact that the agency intends to use condition-based management means that the predicted logging sites and volume are subject to change without notice in a NEPA document.

[204] *See, e.g.*, Rim Country Project Final EIS, Vol. 2, at 165-169 (containing no analysis of impacts to individual IRAs for roadless characteristics 1-3); Roadless Area Specialist Report at 22-25 (same).

[205] Rim Country Project Final EIS, Vol. 2, at 171; Roadless Area Specialist Report at 27.

[206] *See* Rim Country Project Final EIS, Vol. 2, at 163-164; Roadless Area Specialist Report at 20-21.

[207] *See* Rim Country Project Final EIS, Vol. 2, at 145-147; Roadless Area Specialist Report at 3-4.

[208] Rim Country Project Final EIS, Vol. 2, at 145; Roadless Area Specialist Report at 4.

- the Leonard Canyon IRA largely includes land within or adjacent to its namesake canyon.[209] The Forest Service acknowledges that "[t]he steep-walled canyons in the IRA create complex environmental conditions with associated vegetation."[210]

- the Barbershop Canyon IRA largely includes land within or adjacent to its namesake canyon.[211]

- the East Clear Creek IRA largely includes land within or adjacent to its namesake canyon.[212] "The steep-walled canyons create complex environmental conditions with associated vegetation including dry mixed conifer forest."[213]

- the Jack's Canyon IRA largely includes several canyon drainages.[214]

The Forest Service makes clear that the project authorizes mechanical treatments on steep slopes, although it prohibits cable logging with IRAs.[215] The Forest Service does not explain how it will undertake mechanical thinning on slopes over 40% within IRAs without using cable logging, and how it will ensure that such treatments will not degrade soils or other values.

> *Suggested Remedy*: The Forest Service should eliminate the use of heavy machinery in IRAs, and require that any mechanical thinning with IRAs in the project area take place using hand thinning techniques.

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[209] *See* Rim Country Project Final EIS, Vol. 2, at 147-149; Roadless Area Specialist Report at 5-6.

[210] Rim Country Project Final EIS, Vol. 2, at 148; Roadless Area Specialist Report at 5.

[211] *See* Rim Country Project Final EIS, Vol. 2, at 149-151; Roadless Area Specialist Report at 6-8.

[212] *See* Rim Country Project Final EIS, Vol. 2, at 151-153; Roadless Area Specialist Report at 8-10.

[213] Rim Country Project Final EIS, Vol. 2, at 151; Roadless Area Specialist Report at 8.

[214] *See* Rim Country Project Final EIS, Vol. 2, at 153-155; Roadless Area Specialist Report at 10-12.

[215] *See* Rim Country Project Final EIS, Vol. 2, at 162; Roadless Area Specialist Report at 19 (stating that "feller bunchers, log skidders, trucks" could be used for IRA treatment); *id*. (noting that the Forest Plan amendment allowing "treatment of slopes over 40 percent is incorporated into the analysis"); Rim Country Project Final EIS, Vol. 2, at 161; Roadless Area Specialist Report at 18 ("No cable operations are proposed in IRAs).

VI. THE FINAL EIS FAILS TO TAKE A HARD LOOK AT THE IMPACTS OF LIVESTOCK GRAZING.

A. NEPA Requires Agencies Take a Hard Look at a Project's Direct, Indirect, and Cumulative Effects.

NEPA requires federal agencies to take a "hard look" at the direct, indirect, and cumulative environmental impacts of proposed actions.[216] To do so, federal agencies must prepare an environmental impact statement (EIS) for all "major Federal actions significantly affecting the quality of the human environment."[217] An EIS must "provide [a] full and fair discussion of significant environmental impacts" associated with a federal decision and "inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment."[218] Taking the required "hard look" requires agencies to "utiliz[e] … the best available scientific information."[219]

NEPA's review obligations are more stringent and detailed at the project level, or "implementation stage," given the nature of "individual site specific projects."[220] "[G]eneral statements about possible effects and some risk do not constitute a hard look, absent a justification regarding why more definitive information could not be provided."[221]

Analyzing and disclosing site-specific impacts is critical because where (and when and how) activities occur on a landscape strongly determines that nature of the impact. As the Tenth Circuit Court of Appeals has explained, the actual "location of development greatly influences the likelihood and extent of habitat preservation. Disturbances on the same total surface area may produce wildly different impacts on plants and wildlife depending on the amount of contiguous habitat between them."[222] The Court used the example of "building a dirt road along the edge of

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[216] *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989).

[217] 42 U.S.C. § 4332(2)(C); *see also* 40 C.F.R. § 1501.4.

[218] 40 C.F.R. § 1502.1 (1978).

[219] *Colo. Envtl. Coal. v. Dombeck*, 185 F.3d 1162, 1171 (10th Cir. 1999).

[220] *Ecology Ctr., Inc. v. United States Forest Serv.*, 192 F.3d 922, 923 n.2 (9th Cir. 1999); *see also Friends of Yosemite Valley v. Norton*, 348 F.3d 789, 800-01 (9th Cir. 2003); *New Mexico ex rel Richardson v. Bureau of Land Management*, 565 F.3d 683, 718-19 (10th Cir. 2009) (requiring site-specific NEPA analysis when no future NEPA process would occur); *Colo. Envtl. Coal. v. Ofc. of Legacy Mgmt.*, 819 F. Supp. 2d 1193, 1209-10 (D. Colo. 2011) (requiring site-specific NEPA analysis even when future NEPA would occur because "environmental impacts were reasonably foreseeable").

[221] *Or. Natural Res. Council Fund v. Brong*, 492 F.3d 1120, 1134 (9th Cir. 2007) (citation omitted); *see also Or. Natural Res. Council Fund v. Goodman*, 505 F.3d 884, 892 (9th Cir. 2007) (holding the Forest Service's failure to discuss the importance of maintaining a biological corridor violated NEPA, explaining that "[m]erely disclosing the existence of a biological corridor is inadequate" and that the agency must "meaningfully substantiate [its] finding").

[222] *New Mexico ex rel Richardson*, 565 F.3d at 706.

an ecosystem" and "building a four-lane highway straight down the middle" to explain how those activities may have similar types of impacts, but the extent of those impacts – in particular on habitat disturbance – is different.[223] Indeed, "location, not merely total surface disturbance, affects habitat fragmentation,"[224] and therefore location data is critical to the site-specific analysis NEPA requires.

NEPA further mandates that the agency provide the public "'the underlying environmental data' from which the Forest Service develop[ed] its opinions and arrive[d] at its decisions."[225] "The agency must explain the conclusions it has drawn from its chosen methodology, and the reasons it considered the underlying evidence to be reliable."[226] In the end, "vague and conclusory statements, without any supporting data, do not constitute a 'hard look' at the environmental consequences of the action as required by NEPA."[227]

Agencies must disclose impacts that are "cumulative," which regulations define as:

> 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 other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.[228]

The Forest Service NEPA Handbook further explains:

> Groups of actions may have collective or cumulative impacts that are significant. Cumulative effects must be considered and analyzed without regard to land ownership boundaries or who proposes the actions. Consideration must be given to the incremental effects of the action when added to the past, present, and reasonably foreseeable related future actions of the Forest Service, as well as those of other agencies and individuals, that may have a measurable and meaningful impact on particular resources.[229]

Further, "In analyzing the affected environment, NEPA requires the agency to set forth the baseline conditions."[230] Specifically, NEPA requires agencies to "succinctly describe the

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[223] *Id*. at 707.

[224] *Id*.

[225] *WildEarth Guardians v. Mont. Snowmobile Ass'n*, 790 F.3d 920, 925 (9th Cir. 2015).

[226] *N. Plains Res. Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1075 (9th Cir. 2011) (citation omitted).

[227] *Great Basin Mine Watch v. Hankins*, 456 F.3d 955, 973 (9th Cir. 2006).

[228] 40 C.F.R. § 1508.7.

[229] Forest Service Handbook 1909.15, Ch. 15.1.

[230] *Western Watersheds Project v. BLM*, 552 F. Supp. 2d 1113, 1126 (D. Nev. 2008).

environment of the area(s) to be affected or created by the alternatives under consideration."[231] The Council on Environmental Quality, the agency charged with interpreting NEPA, has explained that "[t]he concept of a baseline against which to compare predictions of the effects of the proposed action and reasonable alternatives is critical to the NEPA process."[232] Federal courts hold that "[w]ithout establishing ... baseline conditions ... there is simply no way to determine what effect [an action] will have on the environment and, consequently, no way to comply with NEPA."[233]

B. Decades of Science Demonstrate that Livestock Grazing Threatens Healthy Ecosystems in the American Southwest.

Livestock grazing has been the most widespread management practice on federal lands, and livestock grazing allotments are ubiquitous in the Rim Country project area.[234] A careful evaluation of livestock grazing's impacts as it relates to the proposed action is necessary because status quo grazing will likely undermine the project's restoration goals.

Livestock grazing damages ecosystems in a variety of ways.

More than a century of livestock grazing in ecosystems in the Western U.S. has led to a decline in insect, fish, reptile, amphibian, bird, mammals, ground cover, biomass, and native vegetation,[235] making grazing the most destructive, widespread activity wrought on Western rivers and watersheds since the arrival of European settlers. Decades of scientific research comparing grazed and ungrazed areas have documented that livestock grazing in the arid West degrades water quality and quantity, stream channel morphology, hydrologic function, soil stability, streambank vegetation, aquatic and riparian wildlife, and upland soil and forage conditions, proving that livestock grazing is an ecological catastrophe.[236] A literature review on

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[231] 40 C.F.R. § 1502.15 (1978).

[232] Council on Environmental Quality, Considering Cumulative Effects Under the National Environmental Policy Act 41 (1997), https://ceq.doe.gov/publications/cumulative_effects.html (last visited July 5, 2019).

[233] *Half Moon Bay Fishermans' Mktg. Ass'n v. Carlucci*, 857 F.2d 505, 510 (9th Cir. 1988); *see also N. Plains Res. Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1084–85 (9th Cir. 2011) (holding that agency did not take a sufficiently "hard look" at environmental impacts because it did not collect baseline data).

[234] Fleischner, T.L. 1994. Ecological costs of livestock grazing in western North America. Conservation Biology. 8: 629-644.

[235] Krueper, D.J. 1996. Effects of livestock management on Southwestern riparian ecosystems. Pp 281-301 in Shaw, D.W., and D.M. Finch. 1996. Desired future conditions for Southwestern riparian ecosystems: bringing interests and concerns together. Gen. Tech. Rep. RMRS-GTR-272. USDA Forest Service, Fort Collins, CO. 359 p.

[236] Belsky, A.J., A. Matzke, and S. Uselman. 1999. Survey of Livestock Influences on Stream and Riparian Ecosystems in the Western United States. *Journal of Soil and Water Conservation*

livestock grazing impacts on arid land ecosystems reported that 69% of 132 studies demonstrated significant detrimental effects across those ecosystems.[237]

Livestock grazing poses a particular threat to riparian ecosystems.

Natural riparian and spring habitats make up <1% of the landscape, yet those habitats directly support a disproportionate level of species richness across a variety of taxonomic groups and commonly 2-3 orders of magnitude greater productivity than the surrounding arid uplands.[238, 239] Despite being keystone ecosystems, riparian zones are considered one of the most endangered ecosystems in the Southwest.[240]

Because riparian zones provide water, shade, and succulent vegetation, livestock grazing is a primary cause of stream and riparian habitat degradation in the western United States and continues to exert pervasive adverse influences on springs and other riparian habitats.[241] A report prepared by Forest Service's Rocky Mountain Research Station entitled "Threats to western United States riparian ecosystems" provides a comprehensive review and bibliography of threats to riparian areas.[242] The Forest Service authors reviewed "453 journal articles, reports, books,

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54: 419-431. *See also* Fleischner, T. 1994. The Ecological Costs of Livestock Grazing in Western North America. Conservation Biology. Vol. 8, No. 3. Pp. 629-644. Attached as Ex. 19.

[237] Jones, A., 2000. Effects of cattle grazing on North American arid ecosystems: a quantitative review. Western North American Naturalist. 155-164.

[238] Stevens, L.E., A. Jones, P. Stacey, D. Duff, C. Gourley, and J.C. Catlin. 2002. Riparian ecosystem evaluation: a review and test of BLM's proper functioning condition assessment guidelines. Technical Report submitted to the National Riparian Service Team. U.S. Department of the Interior.

[239] Soykan, C.U., L.A. Brand, and J.L. Sabo. 2009. Causes and consequences of mammal species richness. Ecology and Conservation of the Upper San Pedro Riparian Ecosystem. University of Arizona Press. Tucson, AZ. pp. 107-126.

[240] Noss, R.F., and J.M. Scott. 1995. Endangered ecosystems of the United States: a preliminary assessment of loss and degradation. https://www.researchgate.net/profile/Reed-Noss/publication/246063035_Endangered_eco-systems_of_the_United_States_A_preliminary_assessment_of_loss_and_degradation/links/0deec5389ecd1092a8000000/Endangered-eco-systems-of-the-United-States-A-preliminary-assessment-of-loss-and-degradation.pdf.

[241] Fleischner, T.L. 1994. Ecological costs of livestock grazing in western North America. Conservation Biology. 8: 629-644. *See also* Fleischner, T.L., 2010. Livestock grazing and wildlife conservation in the American West: historical, policy and conservation biology perspectives. Wild Rangelands: Conserving Wildlife While Maintain Livestock in Semi-Arid Ecosystems, 1st edition. J.T. du Toit, R. Kocki and J.C. Deutsch (eds.) Blackwell Publishing. pp. 235-265

[242] Poff, B., K.A. Koestner, D.G Neary, and D. Merritt. 2012. Threats to western United States riparian ecosystems: A bibliography. Gen. Tech. Rep. RMRS-GTR-269. Fort Collins, CO: U.S.

and book chapters addressing threats to riparian ecosystems in western North America were analyzed to identify, quantify, and qualify the major threats to these ecosystems as represented in the existing literature."[243] Poff and colleagues write that "most of the publications in this bibliography that address a single threat discuss grazing" and that "the two topics with the most individual references are grazing and invasive species."[244]

"Livestock grazing has been a significant historical factor in the modification and loss of riparian habitat in particular, in the west."[245] These impacts are widely documented in several decades of scientific literature, and summarized well in Fleischner (1994),[246] Gifford and Hawkins (1978),[247] Krueper (1995),[248] and Kauffman and Krueger (1984).[249] The negative impacts of livestock grazing in riparian areas have been well documented. Extensive scientific literature reveals that livestock grazing negatively affects water quality and water seasonal quantity, stream channel morphology, hydrology, riparian zone soils, instream and streambank vegetation, and aquatic and riparian wildlife.[250]

Department of Agriculture, Forest Service, Rocky Mountain Research Station. 78 p. https://www.fs.fed.us/rm/pubs/rmrs_gtr269.pdf.

[243] Poff, B., K.A. Koestner, D.G. Neary, and V. Henderson, 2011. Threats to Riparian Ecosystems in Western North America: An Analysis of Existing Literature. Journal of the American Water Resources Association (JAWRA) 1-14. DOI: 10.1111/j.1752-1688.2011.00571.x. https://www.fs.fed.us/rm/pubs_other/rmrs_2011_poff_b001.pdf.

[244] Poff et al. (2012), RMRS-GTR-269, at 8, 11.

[245] Rim Country Project Final EIS Vol. 1, at 302.

[246] Fleischner, T.L. 1994. Ecological costs of livestock grazing in western North America. *Conservation Biology* 8(3): 629-644.

[247] Gifford G.F., R.H. Hawkins. 1978. Hydrologic Impact of Grazing on Infiltration: A Critical Review. *Water Resources Research* 14(2): 305-313.

[248] Krueper, D.J. 1995. Effects of livestock management on Southwestern riparian ecosystems. In Shaw, D.W. and D.M. Finch, tech coords. 1996. Desired future conditions for Southwestern riparian ecosystems: Bringing interests and concerns together. 1995 Sept. 18-22, 1995; Albuquerque, NM. General Technical Report RM-GTR-272. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 359 p.

[249] Kauffman, J.B., and W.C. Krueger. 1984. Livestock impacts on riparian ecosystems and streamside management implications…a review. *Journal of Range Management* 37(5): 430-438. *See also* Poff, B., K.A. Koestner, D.G. Neary and V. Henderson 2011. Threats to riparian ecosystems in Western North America: an analysis of existing literature. Journal of the American Water Resources Association. 47(6): 1241-1254

[250] *Id*. *See also* Fleischner, T.L., 2010. *See also* Belsky, A.J., A. Matzke, and S. Uselman. 1999. Survey of livestock influences on stream and riparian ecosystems in the western United States. Journal of Soil and Water Conservation. 54(1): 419-431. *See also* Ohmart, R.D. 1996. Ecological condition of the East Fork of the Gila River and selected tributaries: Gila National Forest, New Mexico. General Technical Report RM., 272, p. 312. *See also* Elmore, W., and B. Kauffman.

Presence of livestock in riparian areas can negatively affect ecosystem integrity including reducing vegetation complexity and plant biomass, bank stability, soil quality, litter cover and water quality. Selective consumption of palatable vegetation by cattle can alter ecosystem structure, function and species composition.[251] Cattle graze cottonwood seedlings preventing tree growth and recruitment.[252] Grazing can severely reduce riparian vegetative cover which increases air and water temperatures and influences invertebrate and native wildlife distribution and diversity.[253] In addition to herbivory and alteration of vegetation, hoof action through concentrated trampling directly degrades streambanks through bank sheering.[254] This leads to excessive erosion and nutrient runoff.[255] Loss of riparian vegetation compounds degradation of streambanks, precipitating permanent channel incisions.[256] Eventually, channels lose their riffle areas, streams migrate laterally, pools shallow out, water tables lower, and riparian vegetation composition shifts from hydric to more mesic species.[257]

Over thirty years ago, overall estimates of riparian habitat loss ranged from 40-90% among the Southwestern states.[258] This trend has only steadily continued and there may be as little as 2% of the original forested riparian habitat remaining in the West.[259]

Grazing impacts on riparian areas fall into four categories: impacts on streamside vegetation, stream channel morphology, water quality/quantity, and streambanks.[260] Collectively, these impacts to vegetation, soils, and water lead to losses of wildlife habitat, reduced stream flow,

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1994. Riparian and watershed systems: degradation and restoration. Ecological implications of livestock herbivory in the West. M. Vavra, W.A. Laycock, and R.D. Pieper (eds.) Society of Range Management, Denver, CO. p. 212-231. *See also* Stevens et al. 2002.

[251] Kauffman and Krueger 1984; Poff et al. 2011

[252] Poff et al. 2011.

[253] Fleischner, T.L., 2010.

[254] Neary and Medina 1996.

[255] Tufekcioglu, M., R.C. Schultz, G.N. Zaimes, T.M. Isenhart, and A. Tufekcioglu. 2013. Riparian grazing impacts on streambank erosion and phosphorus loss via surface runoff. Journal of the American Water Resources Association. 49(1): 103-113.

[256] Poff et al. 2011.

[257] Poff et al. 2011.

[258] Dahl, T.E., 1990. Wetlands losses in the United States, 1780's to 1980's. United States Department of the Interior, Fish and Wildlife Service.

[259] Jones, K.B., E.T. Slonecker, M.S. Nash, A.C. Neale, T.G. Wade, and S. Hamann. 2010. Riparian habitat changes across the continental United States (1972–2003) and potential implications for sustaining ecosystem services. Landscape Ecology. 25(8): 1261-1275.

[260] Kauffman, J.B., and W.C. Krueger. 1984. Livestock impacts on riparian plant communities and streamside management implications-a review. *Journal of Range Management* 37(5): 430-438.

increased pollution, and eradication of plant and animal species.[261] Grazing on riparian plants reduces vegetative cover and exposes soil to erosion, which in combination with streambank trampling leads to increased erosion and turbidity.[262] Grazing animals congregating in riparian areas feed on native tree and shrub regeneration, disrupting their reproductive cycle and leading to destabilized streambanks,[263] increased water temperatures, loss of hiding and breeding cover, and defecation and urination directly in the water. Reduced rainfall infiltration into soil[264] and increased sediment loads combine to exacerbate riparian ecosystem decline and increase stream down-cutting.[265]

Studies show that riparian meadows face particular threats from livestock grazing. In a review of the endangered Arizona willow, the U.S. Fish and Wildlife Service stated:

> Historic and current livestock grazing in the high elevation riparian meadows on the [Apache-Sitgreaves National] Forest has contributed to habitat degradation. Livestock have had less of a recent effect on Reservation riparian areas because no livestock grazing has occurred there for a number of years. Livestock overuse of riparian meadows affects the habitat through hydrologic changes, soil compaction, erosion, bank instability, and siltation. Repeated habitat overuse by cattle results in reduced plant vigor and reproductive success, shifts in relative abundance of plant species, and localized loss of plant species. The adverse effects of livestock on the habitat are believed to be the most important factor affecting the populations on the Forest.[266]

Environmental degradation through grazing is not restricted to historical practices. To this day, it is a chronic and ongoing issue. For example:

> One of the most significant adverse impacts within western riparian systems has been the perpetuation of improper grazing practices (Hastings and Turner 1965, Ames 1977, Glinski 1977, Marlow and Pogacnik 1985). Chaney et al. (1990) noted that initial deterioration of western riparian systems began with severe overgrazing in the late nineteenth century. For the last 75 years, the Forest Service has acknowledged the

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[261] Armour, C.L., D.A. Duff, and W. Elmore. 1991. The effects of livestock grazing on riparian and stream ecosystems. *Fisheries* 16(1): 7-11.

[262] Trimble, S.W., and A.C. Mendel. 1995. The cow as a geomorphic agent - a critical review. *Geomorphology* 13 (1995): 233-253.

[263] Patten, D.T. 1998. Riparian ecosystems of Semi-Arid North America: Diversity and Human Impacts. *Wetlands* 18(4): 498-512.

[264] Gifford, G.F., and R.H. Hawkins. 1978. Hydrologic Impact of Grazing on Infiltration: A Critical Review. *Water Resources Research* 14(2): 305-313.

[265] Obedzinski, R.A., C.G. Shaw, and D.G. Neary. 2001. Declining woody vegetation in riparian ecosystems of the Western United States. *Journal of Applied Forestry*. 16(4): 169-181.

[266] 57 Fed. Reg. 57 FR 54747 (Nov. 20, 1992); Proposed Endangered Status for the Plant "*Salix arizonica*" (Arizona willow), with Critical Habitat.

> continued damage cattle have done to riparian areas, upland tributaries, and ranges. The effects of both past and ongoing grazing activities on the forest have had a profound effect on riparian habitat and there has been little improvement western watersheds under modern range management. (GAO 1988, Alford 1993). By not allowing riparian vegetation to develop, there is no rehabilitation of stream banks or prevention of erosion. As a result, the conditions of these streams are in a perpetual state of decay.[267]

Studies also show that current levels of livestock grazing are degrading the stream and riparian components and not allowing for recovery of degraded stream banks.[268]

Damage from livestock to riparian areas is only likely to worsen as climate-induced drought grips the Southwest. An American Fisheries Society editorial (Hughes 2014) stated "Livestock grazing exacerbates climate change effects on stream, riparian, and upland natural resources. Greatly reducing public land livestock grazing would greatly reduce this spatially extensive pressure and thereby reduce the susceptibility of those resources to climate change. It could also free up over $144 million for more fish- and wildlife-friendly landscape rehabilitation."[269]

Forest Service ecologists have established that livestock grazing has exacerbated riparian ecosystem decline and stream down-cutting associated with multiple concurrent factors.[270] Likewise, New Mexico Department of Game and Fish has recognized that the effects of livestock grazing are compounded by extended drought and altered hydrological function.[271] Additionally, the Forest Service has written on this issue in a climate assessment of the middle Rio Grande in New Mexico, stating that

> For many species, reducing non climate-related threats during restoration is important. For example, herbicides pose high risks to amphibians (USACE 2001). Grazing may exacerbate disturbance related to restoration treatments. Warming conditions and increased variability to river flow will reduce the capacity of the

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[267] U.S. Fish & Wildlife Service, Biological Opinion, On-going and Long-term Grazing on the Tonto National Forest (Feb. 28, 2002) (02-21-99-F-300), p. 19.

[268] Knapp, R.A., V.T. Vredenburg, and K.R. Matthews. 1998. Effects of stream channel morphology on Golden Trout spawning habitat and recruitment. Ecological Applications. 8: 1104-1117. *See also* Nussle, S.C., K.R. Matthews, and S.M. Carlson. 2017. Patterns and dynamics of vegetation recovery following grazing cessation in the California golden trout habitat. Ecosphere. 8(7): e01880. 10.1002/ecs2.1880. *See also* Nussle, S.C., K.R. Matthews, and S.M. Carlson. 2015. Mediating water temperature increases due to livestock and global change in high elevation meadow streams of the Golden Trout Wilderness. PLOS ONE. 10(11): 1-22.

[269] B. Hughes. Livestock Grazing in the West: Sacred Cows at the Public Trough Revisited. Aug. 2014. *Fisheries*. Am. Fisheries Soc'y. Vol. 39 No. 8. At page 339.

[270] Obedzinski, R.A.; Shaw, C.G.; Neary, D.G. 2001. Declining woody vegetation in riparian ecosystems of the Western United States. Journal of Applied Forestry. 16(4): 169-181.

[271] New Mexico Department of Game and Fish. 2006. Comprehensive Wildlife Conservation Strategy for New Mexico. New Mexico Department of Game and Fish. Santa Fe, New Mexico. 526 pp + appendices.

> riparian habitats and individual species to recover from disturbances. Decisions on land use and conversion should consider the overall effect of human activities plus potential consequences of climate change for habitat loss.[272]

As Smith and Keinath wrote regarding the northern leopard frog, synergistic effects of climate change and drought are exacerbated by grazing, as depleted water sources cause grazers to congregate on remaining water sources, "especially by introduced grazers like cattle."[273] Likewise, regarding Arizona Willow, Decker wrote that "[a]n important consideration in the evaluation and management of grazing impacts is the additive effect of herbivory from a variety of sources. Although *S. arizonica* certainly evolved with native herbivores, the effect of domestic livestock in combination with increasing pressure from wildlife means that the plants may frequently be exposed to levels of herbivory beyond their presumed tolerance."[274]

Given this litany of damage to riparian areas caused by livestock, it is not surprising that riparian areas in the Southwest are in dire need of restoration and protection. Over three decades ago, an assessment by the U.S. General Accounting Office found that that most (~90%) of the lands managed by the Forest Service were in need of restoration. A few years later, Elmore and Kaufman (1994) reaffirmed this point, stating, "Current Forest Service policy calls for undertaking a national riparian strategy designed to improve markedly riparian conditions along lakes and streams by the year 2000." This has still not occurred and the West's riparian systems have been in a chronic state of degradation. This is particularly true in Arizona and New Mexico (Region 3).[275]

The only bright spot in this otherwise grim picture is that riparian areas, protected from livestock, can recover. Although Southwestern stream ecosystems have been greatly altered, these systems are ecologically resilient and are likely to respond positively to improved management and restoration practices, the simplest being to curb poorly managed gazing practices.[276] Livestock exclusion has shown to be the most practical approach for initiating rapid

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[272] M. Friggens et al. Vulnerability of species to climate change in the Southwest: terrestrial species of the Middle Rio Grande. 2013. Gen. Tech. Rep. RMRS-GTR-306. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 191 p. At page 58.

[273] B. Smith and D. Keinath. Northern Leopard Frog (Rana pipiens): A Technical Conservation Assessment. Prepared for the USDA Forest Service, Rocky Mountain Region, Species Conservation Project. 2007. At page 3.

[274] K. Decker. Salix arizonica Dorn (Arizona willow): A Technical Conservation Assessment. Prepared for the USDA Forest Service, Rocky Mountain Region, Species Conservation Project. 2006. At page 29.

[275] Trudeau, J. 2020. Ravaged River: Cattle Damage to Endangered Species Habitat in Arizona's Verde River Watershed. Report. Center for Biological Diversity. 39 pp.

[276] Hayward, B., E.J. Heske, and C.W. Painter. 1997. Effects of livestock grazing on small mammals at a desert cienaga. The Journal of Wildlife Management. 123-129. *See also* Phillips, F., 1998. The'Ahakhav Tribal Preserve: Colorado River Indian Tribes initiate a major riparian restoration program. Restoration and Management Notes. 16(2): 140-148. *See also* Giuliano,

riparian recovery or improving highly sensitive areas, and it works.[277] Cessation of livestock grazing in riparian areas can increase the abundance of small mammals that require dense vegetation.[278] The substantial increase of plant cover that followed the removal of livestock from Southwestern riparian areas quickly increases abundance and diversity of invertebrates, herpetofauna, birds, and small mammals.[279] When maintained, grazing exclosure fencing protects riparian areas and leads to rapid recovery of vigorous native vegetation[280] which is critical to maintain streambank stability and provide habitat to riparian and aquatic wildlife.[281] The Forest Service's own Watershed Conservation Practices Handbook (FSH 2509.25) directs the agency to "[e]xclude livestock from riparian areas and wetlands that are not meeting or moving towards desired condition objectives where monitoring information shows continued livestock grazing would prevent attainment of those objectives."[282]

Because of their biological importance, increasingly threatened status, and potential for offering resilience to protect biodiversity, protection and restoration of riparian ecosystems should

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W.M., and J.D. Homyack. 2004. Short-term grazing exclusion effects on riparian small mammal communities. Rangeland Ecology and Management. 57(4): 346-350. *See also* Hough-Snee, N., B.B. Roper, J.M. Wheaton, P. and R.L. Lokteff. 2013. Riparian vegetation communities change rapidly following passive restoration at a northern Utah stream. Ecological Engineering. 58: 371-377. *See also* Strong, T.R., and C.E. Bock. 1990. Bird species distribution patterns in riparian habitats in southeastern Arizona. The Condor. 92(4): 866-885. *See also* Krueper, D., J. Bart, and T.D. Rich. 2003. Response of vegetation and breeding birds to the removal of cattle on the San Pedro River, Arizona (USA). Conservation Biology. 17(2): 607-615. *See also* Wyman, S., D. Bailey, M. Borman, S. Cote, J. Eisner, W. Elmore, B. Leinard, S. Leonard, F. Reed, S. Swanson, L. Van Riper, T. Westfall, R. Wiley, and A. Winward. 2006. Riparian area management: Grazing management processes and strategies for riparian-wetland areas. Technical Reference 1737-20. BLM/ST/ST-06/002+1737. U.S. Department of the Interior, Bureau of Land Management, National Science and Technology Center. Denver, CO. 105 pp.

[277] Grudzinski, B., K. Fritz, and W. Dodds. 2020. Does riparian fencing protect stream water quality in cattle-grazed lands? Environmental Management. 66(1): 121-135.

[278] Soykan, C.U., L.A. Brand, and J.L. Sabo. 2009. Causes and consequences of mammal species richness. Ecology and Conservation of the Upper San Pedro Riparian Ecosystem. University of Arizona Press. Tucson, AZ. pp. 107-126.

[279] Duncan, D.K., 1988. Small mammal inventory of the upper San Pedro River Valley, Cochise County, Arizona: Progress report. San Pedro Project Office, San Simon Resource Area, Safford District, Bureau of Land Management. *See also* Fleischner, T.L. 1994. Ecological costs of livestock grazing in western North America. Conservation Biology. 8: 629-644. *See also* Soykan et al. (2009) and Grudzinski et al. (2020).

[280] Schulz, T.T., and W.C. Leininger. 1990. Differences in riparian vegetation structure between grazed areas and exclosures. *Journal of Range Management* 43(4): 295-299.

[281] Sarr, D.A. 2002. Riparian Livestock Exclosure Research in the Western United States: A Critique and Some Recommendations. *Environmental Management* 30(4): 516-526.

[282] *Ibid, 12.1.1(f)* at 9.

become a high priority for federal agencies.[283] Furthermore, removal of livestock from sensitive ecosystems such as arid-lands riparian areas is a critical component of adapting to climate change.[284]

Livestock grazing threatens wildlife.

Grazing of the most nutritious plants by livestock results in a loss of forage for native species and can alter habitat or insect prey base.[285] A decrease in prey base inevitably leads to a decrease in carnivores in the area, which are also eliminated by the government at the request of the livestock community. "The productivity, diversity, and species richness of native grasslands are threatened by competition from noxious and invasive weeds/grasses. Productivity is threatened by other factors including drought, soil erosion, fire suppression, and improper livestock management practices."[286] Grazing also has negative effects on songbirds, reptiles and other mammals especially if their habitat is close to the ground.[287] Rosenstock and Van Riper reported that: "Livestock grazing and fire suppression commonly are cited as causes of woodland expansion."[288]

A 2005 Forest Service review and assessment of grazing impacts on terrestrial wildlife in Region 3, GTR-142, found that grazing has multiple negative effects on native species.[289] This

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[283] Belsky, A.J., A. Matzke, and S. Uselman. 1999. Survey of livestock influences on stream and riparian ecosystems in the western United States. Journal of Soil and Water Conservation. 54(1): 419-431. *See also* Roper, B.B., J.M. Capurso, Y. Paroz, and M.K. Young. 2018. Conservation of aquatic biodiversity in the context of multiple-use management on National Forest System lands. Fisheries. 43(9): 396-405.

[284] Beschta, R.L., D.L. Donahue, D.A. DellaSala, J.J. Rhodes, J.R. Karr, M.H. O'Brien, T.L. Fleischner, and C.D. Williams. 2013. Adapting to climate change on western public lands: addressing the ecological effects of domestic, wild, and feral ungulates. *Environmental Management* 51: 474-491.

[285] Donahue, D. 1999. The Western Range Revisited: Removing Livestock from Public Lands to Conserve Native Biodiversity. Norman, OK: University of Oklahoma Press. 338 pages. See also Kie, John G., Charles J. Evans, Eric R. Loft, and John W. Menke. 1991. Foraging behavior by mule deer: the influence of cattle grazing. *The Journal of Wildlife Management* 55(4):665-674.

[286] Central Arizona Grasslands Conservation Strategy, page 21.

[287] Finch, D.M., and W. Block, technical editors. 1997. Songbird ecology in southwestern ponderosa pine forests: a literature review. Gen. Tech. Rep. RM-GTR-292. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 152 p.

[288] Rosenstock, S. S. and Van Riper III, C. (2001) Breeding Bird Responses to Juniper Woodland Expansion. *Journal of Range Management*, 54:226-232.

[289] Zwartjes, P.W., J.E. Cartron, P.L.L. Stoleson, W.C. Haussamen, and T.E. Crane. 2005. Assessment of Native Species and Ungulate Grazing in the Southwest: Terrestrial Wildlife. Gen. Tech. Rep. RMRS-GTR-142. Fort Collins, CO: U.S. Department of Agriculture, Forest Service,

incredibly useful and regionally specific document, assessed the ecological interactions among Southwest native wildlife species and grazing and range management practices, and was designed to inform the region's land managers and biologists.

A database developed to complement the GTR-142 assessment (provided on a companion CD) contains accounts for 305 terrestrial species and subspecies (not including fish) believed to be potentially vulnerable to both short-term and long-term effects of native and domestic ungulate grazing. The assessment exhaustively details the effects of livestock grazing on wildlife, including finding that:

- Livestock use has "a consistently negative impact and therefore to be generally incompatible with habitat maintenance" for wetland/marsh habitats;[290]

- For mammals of riparian and wet meadow habitats, "such wetlands are generally incompatible with livestock use."[291]

Livestock grazing effects have contributed to the listing of many threatened and endangered species, including the yellow-billed cuckoo,[292] spikedace and loach minnow,[293] Northern Mexican and narrow-headed gartersnakes,[294] and others southwestern species found in Rim Country.

Ample science demonstrates the damaging impacts of livestock grazing on fish. Livestock grazing directly affects three general components of stream and riparian ecosystems that are important to maintaining viable fish and amphibian populations: streamside vegetation; stream channel morphology, including the shape of the water column and streambank structure; and water quality including water temperature.[295] These impacts can ultimately alter the population

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Rocky Mountain Research Station. 74 p. plus CD. https://www.fs.fed.us/rm/pubs/rmrs_gtr142.pdf.

[290] *Id*. at 29.

[291] *Id*. at 34.

[292] 60 Fed. Reg. 10,694, 10,707 (Feb. 27, 1995) ("Overuse by livestock has been a major factor in the degradation and modification of riparian habitats in the United States … Livestock grazing in riparian habitats typically results in reduction of plant species diversity and density, especially of palatable plants like willow and cottonwood saplings.").

[293] 77 Fed. Reg. 10,810, 10,818 (Feb 23, 2012) ("Impacts associated with roads and bridges, changes in water quality, improper livestock grazing, and recreation have altered or destroyed many of the rivers, streams, and watershed functions in the ranges of the spikedace and loach minnow.").

[294] 79 Fed. Reg. 38,678, 38718 (July 8, 2014) ("We found numerous effects of livestock grazing that have resulted in the historical degradation of riparian and aquatic communities that have likely affected northern Mexican and narrow-headed gartersnakes.").

[295] Kauffman, J.B. and W.C. Krueger. 1984. Livestock impacts on riparian ecosystems and streamside management implications... a review. Rangeland Ecology and Management/Journal of Range Management Archives. 37(5): 430-438. *See also* Nussle, S.C., K.R. Matthews, and

structure of resident fish, particularly salmonids.[296] One review reported that 15 of 19 studies showed that stream fish were diminished in the presence of livestock grazing.[297]

Scientists have concluded that livestock grazing has been a major factor in eliminating native fishes from portions of their historic ranges.[298] Researchers realized decades ago that habitat loss driven by livestock grazing is primary threat to native fish in nearby northern New Mexico. As much as fifty years ago, Behnke and Zarn,[299] and Behnke[300] concluded that livestock grazing on National Forests and other lands was harming Rio Grande cutthroat trout populations. Researchers working on behalf of New Mexico Game and Fish Department concluded that:

> Livestock grazing in riparian areas has contributed to the decline in quality of many aquatic habitats and in some instances has been a major factor in eliminating native fishes from portions of their historic ranges. Livestock trample and consume vegetation that maintains stream bank integrity, hoof action destroys undercut banks and accelerates erosion, and feces elevate nutrients unnaturally, particularly in spring habitats… Livestock grazing has contributed to increased erosion in many watersheds and thus elevated sediment loads in virtually all river systems.[301]

As with damage to riparian areas, fish habitat can be restored by eliminating livestock. Prominent fish scientists have concluded that "habitat degradation as a result of excessive grazing pressure can most easily be reversed by excluding livestock from the riparian area."[302]

S.M. Carlson. 2017. Patterns and dynamics of vegetation recovery following grazing cessation in the California golden trout habitat. Ecosphere. 8(7): e01880. 10.1002/ecs2.1880. *See also* Nussle, S.C., K.R. Matthews, and S.M. Carlson. 2015. Mediating water temperature increases due to livestock and global change in high elevation meadow streams of the Golden Trout Wilderness. PLOS ONE. 10(11): 1-22.

[296] Platts, W.S. 1991.

[297] Platts, W.S. 1991.

[298] Propst, D.L. 1999. Threatened and endangered fishes of New Mexico. Tech. Rpt. No. 1. New Mexico Department of Game and Fish, Santa Fe, NM at page 15.

[299] Behnke, R.J. and M. Zarn. 1976. Biology and management of threatened and endangered western trouts. Gen. Tech. Rep. USDA Forest Service, RM-28: 1-45. Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO.

[300] Behnke, R.J. 1992. Native Trout of Western North America. American Fisheries Society, Monograph No. 6.

[301] Propst, D.L. 1999. Threatened and endangered fishes of New Mexico. Tech. Rpt. No. 1. New Mexico Department of Game and Fish, Santa Fe, NM at page 15.

[302] Pritchard, V.L. and D.E. Crowley. 2006. Rio Grande Cutthroat Trout (*Oncorhynchus clarkii virginalis*): A Technical Conservation Assessment. Prepared for the USDA Forest Service, Rocky Mountain Region, Species Conservation Project. Department of Fishery and Wildlife Sciences, New Mexico State University, Las Cruces, NM. At page 50.

Rinne and LaFayette (1991) found that ungrazed streams on the Tonto and Santa Fe National Forests had twice as many trout, trout populations, and trout biomass than grazed streams.[303] Propst and McInnis (1975) found that Santa Fe National Forest streams with little riparian habitat and erosion problems, such as degraded banks or sign of rapid run-off, sustained few or no cutthroat trout.[304] Platts (1991) reviewed 21 studies, finding only one that did not concluded that cattle degrade trout populations and habitat.[305] Chaney et al. (1990) reported: 1) that degraded cutthroat spawning habitat in Mahogany Creek, ID recovered when cattle were removed from the riparian area; 2) that populations of cutthroat trout in Huff Creek, Wyoming increased from 36 per mile to 444 per mile when cattle were excluded from the stream area, as a result of better in-stream cover lower water temperature, and decreased sedimentation; and 3) that cattle exclusion from the riparian zone of Bear Creek in Oregon converted an ephemeral reach of the stream into a permanent flow supporting a wild trout population.[306] Similarly, twenty years of cattle exclosures on Camp Creek in central Oregon turned an ephemeral wash into permanent stream capable of supporting redband trout.[307]

Species that rely on grasslands and uplands degraded by livestock grazing also likely will benefit from eliminating or reducing livestock numbers.

Upland ecosystems can recover if livestock numbers are limited or eliminated. For example:

- Removing of cattle from rangelands for 35 years led to the disappearance of rabbitbrush from previously shrub-dominated communities, and native grasses regained dominance.[308]

[303] Rinne, J.N. and R.A. Lafayette 1991. Southwestern Riparian-Stream Ecosystems: Research Design, Complexity, and Opportunity. USDA Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO. 9pp.

[304] Propst, D.L. and M.A. McInnis 1975. An analysis of streams containing native Rio Grande cutthroat in the Santa Fe National Forest. WICHE Report for the Santa Fe National Forest, Region 3, Albuquerque, NM.

[305] Platts, W.S. 1991. Livestock grazing. Pp. 389- 423 In: W.R. Meehan, editor. Influences of Forest and Rangeland Management on Salmonids Fishes and their Habitats. Amer. Fish. Soc. Spec. Pub. 19: 389-423. Bethesda, MD. 751 pp.

[306] Chaney, E., W. Elmore, and W.S. Platts 1990. Livestock Grazing on Western Riparian Areas. EPA report. 14-7, 26-7.

[307] Hunter, C.J. 1991. Better Trout Habitat. Island Press, Washington, D.C.

[308] Austin, D.D., and P.J. Urness. 1998. Vegetal change on a northern Utah foothill range in the absence of livestock grazing between 1948 and 1982. *Great Basin Naturalist* 58(2): 188-191.

- Forest Service scientists at the Intermountain Forest and Range Experiment Station found that protection of an Idaho range from grazing increased grass and forb production by 30% and decreased shrub production by 20%.[309]

- University of Idaho range scientists documented a 20-fold increase in perennial grass cover after 25 years of grazing exclusion while shrub cover only increased by 1.5-fold, attributing the grass response to "the availability of seeds as formerly depleted populations increase in size."[310]

- A southeastern Arizona rangeland excluded from cattle grazing for 14 years, and grass cover increased by 45%, the grass community was more heterogeneous, herb cover was higher, and rodent and bird numbers were higher than grazed comparison areas.[311]

- USDA research has found that excluding cattle from a landscape for five growing seasons "significantly increased: (1) total vegetative cover, (2) native perennial forb cover, (3) grass stature, (4) grass flowering stem density, and (5) the cover of some shrub species and functional groups."[312]

Livestock grazing worsens the threat of fire.

Damage from livestock grazing also increases the risk of fire. As the Center stated in our scoping comments, livestock grazing

> directly contributes to fire hazard by altering vegetation communities, delaying fire rotations, increasing forest density, and reducing forage opportunities for herbivorous species and. Potentially significant cumulative effects to soil productivity, plant communities, fire regime and wildlife may result from vegetation treatments in combination with livestock grazing. Livestock also facilitate the spread of exotic species, particularly in combination with fire, and reduce the competitive and reproductive capacities of native species. Exotic plant species, once established, can displace native species, in part, because native grasses are not adapted to frequent and close grazing in combination with fire disturbance. Exotic plant spread is a potentially significant cumulative impact of the proposed action. Treatments similar to the proposed action left forest sites

[309] Laycock, W.A. 1967. How heavy grazing and protection affect sagebrush-grass ranges. *Journal of Range Management* 20: 206-213.

[310] Anderson, J.E., and K.E. Holte. 1981. Vegetation development over 25 years without grazing on sagebrush-dominated rangeland in southeastern Idaho. *Journal of Range Management* 34:25-29.

[311] Bock, C.E., J.H. Bock, W.R. Kenney, and V.M. Hawthorne. 1984. Responses of birds, rodents, and vegetation to livestock exclosure in a semidesert grassland site. *Journal of Range Management* 37(3): 239-242.

[312] Kerns, B. K., M. Buonopane, W.G. Thies, and C. Niwa. 2011. Reintroducing fire into a ponderosa pine forest with and without cattle grazing: understory vegetation response. *Ecosphere* 2(5):1-23.

> overrun with cheatgrass (*Bromus tectorum*). Exotic grass invasion is foreseeable and has important long-term implications for native plant communities in fire-adapted ecosystems and wildlife.[313]

Livestock grazing is a primary driver of fire regime disruption. Livestock grazing decreases understory biomass and density, reducing competition with conifer seedlings and reducing the ability of the understory to carry low-intensity fire, contributing to dense forests with altered species composition.[314] Livestock grazing directly contributes to fire hazard in the project area by impairing soil productivity and altering vegetation communities, which indirectly contribute to delayed fire rotations, increased forest density, and reduced forage opportunities for herbivorous species and predators. Cattle grazing also negatively impacts high elevation montane riparian meadows and creeks through hydrologic changes, soil compaction, erosion, bank instability, and siltation.[315] Often, these impacts can have greater effects on wildlife than do wildfires.[316]

Continued livestock grazing risks post-treatment invasion of exotic plants. Livestock facilitate the spread of exotic species, particularly in combination with fire, and reduce the competitive and reproductive capacities of native species.[317] Exotic plant species, once established, can displace native species, in part, because native grasses are not adapted to frequent and close grazing in combination with fire disturbance.[318/]

Livestock disturb soil, enable seeds of exotic species to spread, and reduce the competitive and reproductive capacities of native species. Exotic plant species, once established, can displace

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[313] Letter from T. Schulke, Center for Biological Diversity to U.S. Forest Service (Aug. 10, 2016) (in project file).

[314] Belsky A.J. and D.M. Blumenthal. 1997. Effects of livestock grazing on stand dynamics and soils in upland forests of the Interior West. *Conservation Biology* 11:316-27.

[315] Federal Register Vol. 57 No. 225, November 20, 1992, Endangered and Threatened Wildlife and Plants; Proposed Endangered Status for the Plant "*Salix arizonica*" (Arizona willow), with Critical Habitat.

[316] Horncastle, V.J., C.L. Chambers, and B.G. Dickson. 2019. Grazing and Wildfire Effects on Small Mammals Inhabiting Montane Meadows. Journal of Wildlife Management 83(3): 534-543.

[317] Brooks, M.L., C.M. D'Antonio, D.M. Richardson, J. B. Grace, J.E. Keeley, J. M. DiTomaso, R.J. Hobbs, M. Pellant and D.Pyke. 2004. Effects of invasive alien plants on fire regimes. *BioScience* 54(7):677-688.

[318] Mack, R. N., and J. N. Thompson. 1982. Evolution in steppe with few large, hooved mammals. *American Naturalist* 119:757-72. *See also* Melgoza, G., R.S. Nowak and R.J. Tausch. 1990. Soil water exploitation after fire: competition *between Bromus tectorum* (cheatgrass) and two native species. *Oecologica* 83:7-13. *See also* Belsky, A.J., and J.L. Gelbard. 2000. Livestock Grazing and Weed Invasions in the Arid West. Oregon Natural Desert Association: Portland, OR. April. 31 pp.

native species, in part, because native grasses are not adapted to frequent and close grazing in combination with fire disturbance.

Exotic plant spread is a potentially significant cumulative impact of the proposed action. Treatments similar to the proposed action in northern Arizona left forest sites overrun with cheatgrass (*Bromus tectorum*). Exotic grass invasion is foreseeable and has important long-term implications for native plant communities in fire-adapted ecosystems and wildlife. Melgoza and others (1990) studied cheatgrass soil resource acquisition after fire and noted its competitive success owing to its ability suppress the water uptake and productivity of native species for extended periods of time.[319] They further showed that cheatgrass dominance is enhanced by its high tolerance to grazing. Its annual life-form coupled with the abilities to germinate readily over a wide range of moisture and temperature conditions, to quickly establish an extensive root system, and to grow early in the spring contribute to its successful colonization. In addition, Melgoza and others showed that cheatgrass successfully competes with the native species that survive fire, despite these plants being well-established adult individuals able to reach deeper levels in the soil. This competitive ability of cheatgrass contributes to its dominance when lands experience synergistic disturbances from grazing, mechanical treatments, and fire.

C. The Final EIS Fails to Address the Synergistic Impacts of the Rim Project's Logging and Prescribed Fire Together with Livestock Grazing.

The Rim Country Project Final EIS states that the project is needed to, among other things:

- Increase forest resilience and sustainability,
- Reduce hazard of undesirable fire effects,
- Improve terrestrial and aquatic species habitat,
- Improve the condition and function of streams, springs, and other aquatic and hydrological resources, [and]
- Restore riparian vegetation.[320]

Achieving each of these goals will be made more difficult by the continuation of livestock grazing; each goal could be achieved in part by reducing livestock grazing numbers and distribution. It is thus critical that the Forest Service consider both the synergistic and cumulative impacts of continued livestock grazing together with the tree removal and burning the project proposes. Further, continued livestock grazing will interfere with, or undercut the efficacy of, restoration projects, and reducing livestock grazing numbers and distribution could make other mitigation measures less necessary or more effective.

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[319] *See* Melgoza et al. (2009), *supra*.

[320] Rim Country Project Final EIS, Vol. 1, at viii.

The Forest Service, however, fails to take the required hard look at the impacts of livestock grazing, the interaction of livestock grazing with those caused by the Rim Country Project.

As the science discussed above demonstrates, livestock grazing concurrent with the proposed action may adversely impact forest resilience. Continued livestock grazing also threatens the success of efforts to restore diverse wildlife habitats and improve watershed conditions, and will undermine efforts to achieve the Rim Country Project's purpose and need.

The Final EIS states that riparian areas are important in the project area, and admits that riparian areas are degraded in the project area. The Final EIS states:

> The benefits of riparian areas in the project area cannot be over emphasized. Riparian areas help capture pollutants including sediment and nutrients, contribute to channel stability by providing protective vegetative cover and root biomass that anchors soils, regulate water temperatures by providing shade, provide areas for floodwater storage and dissipation and are important wildlife habitat features.[321]

Despite their importance, the Forest Service admits that riparian habitats in the project area are poorly managed. "Many of streams within the project area exhibit legacy effects from past land management, such as poor logging practices, poor road locations, overgrazing, among others."[322] "Many riparian streams in the Rim Country project area, particularly within the Rodeo-Chediski Fire area, are currently non-functioning or functioning-at-risk, with accelerated erosion and increased peak flows."[323]

In fact, the Forest Service labels *more than 70%* of the riparian stream miles within the project area as either "non-functioning" or "functioning at risk." Non-functioning "riparian areas clearly are not providing adequate vegetation, landform, or woody material to dissipate stream energy associated with moderately high flows, and thus are not reducing erosion or improving water quality," and constitute one-sixth of the stream miles across the three forests. An additional 54% of the streams are functioning-at-risk "riparian areas [and so] are in limited functioning condition: however, existing hydrologic, vegetative, or geomorphic attributes make them susceptible to impairment."[324]

The Forest Service admits that livestock grazing is a threat to the recovery of the Gila trout, the Little Colorado spinedace, the loach minnow, roundtail chub, and the headwater chub, habitat for which is found within the project area.[325]

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[321] Rim Country Project Final EIS, Vol. 1, at 129.

[322] Rim Country Project Final EIS, Vol. 1, at 109.

[323] Rim Country Project Final EIS, Vol. 1, at 16.

[324] Rim Country Project Final EIS, Vol. 1, at 16.

[325] Four Forest Restoration Initiative, Rim Country, Aquatics Specialist Report (Mar. 2022) at 25, 26, 31, 44, 45.

The Final EIS also discloses that springs in the Rim Country project area are in poor condition, and that livestock grazing is in part to blame.

> There are approximately 360 known springs in the … project area. A limited number have been assessed, but these assessments indicate that many springs in the project area have been adversely affected by human activities such as flow regulation through installation of spring boxes and piping of discharge to off-site locations [almost certainly in part for livestock], recreation, and urbanization and other construction activities, as well as grazing by wild and domestic herbivores. Approximately 184 springs in the Rim Country project area exhibit declining or degraded conditions where restoration treatments may be applied.[326]

Livestock are one of the key drivers of ecosystem dysfunction in fire-adapted ecosystems and riparian/aquatic ecosystems. The Forest Service will fail to restore the Rim Country landscape if livestock management is not part of a comprehensive restoration package.

The Final EIS fails to comply with NEPA in a number of important ways.

First, the Final EIS fails to disclose the environmental baseline by failing to address livestock grazing's role as a key driver in the current fire regime. Despite the myriad and well understood destructive impacts of livestock grazing on forests and landscapes in the American West, the Final EIS fails to adequately disclose the role of livestock grazing in the current degraded upland and riparian conditions within the project area.

Logging, livestock grazing, and fire exclusion created the conditions that now require ecological restoration.[327] The Final EIS fails to adequately describe livestock grazing as a significant cause of impaired ecological function or departed structure in grasslands and savannas. The Range Specialist Report is clear: "Livestock grazing can affect vegetation by reducing plant height, plant canopy cover, and ground cover, and can compact soils" and that "changes in the soil's surface structure and its ability to accept, hold, and release water may be affected by compaction caused by trampling."[328]

The Final EIS also admits that:

> The grasslands have impaired soil conditions due to inadequate protective ground cover, compacted soil surfaces, and encroaching pines and junipers. In many meadows, vegetative ground cover is low, hydrologic soil function is reduced from compaction, groundwater levels have dropped below root zones due to gully

[326] Rim Country Project Final EIS, Vol. 1, at 16.

[327] Covington, W.W., and M.M. Moore. 1994. Southwestern ponderosa forest structure: Changes since Euro- American settlement. *Journal of Forestry* 92: 39-47.

[328] K. Hughes, Four Forest Restoration Initiative, Rim Country Environmental Impact Statement, Range Specialist Report (Mar. 2022), at 7, 8 (hereafter "Range Specialist Report (2022)").

> formation, and encroaching upland tree species are competing with desired species.[329]

Many of these issues can be traced to livestock grazing, but the Final EIS fails to acknowledge this critical connection. For example, while the Final EIS, as quoted above, admits that more than half the springs in the project area "exhibit declining or degraded conditions where restoration treatments may be applied,"[330] it does not specifically address excluding livestock as a way to restore these critical areas.[331] The Forest Service also specifically declined to answer the question of how many acres within the project area may currently be characterized as in unsatisfactory condition due to livestock grazing.[332]

The Final EIS also states that:

> Grasslands were designated a priority habitat in the Arizona Partners In Flight Bird Conservation Plan, with the objective to permanently protect, enhance, and/or restore over 500,000 acres of grassland in northern Arizona. Grasslands and meadows should have satisfactory soil conditions, with vegetative cover adequate to prevent erosion above tolerance conditions, uncompacted soil surfaces that allow for satisfactory hydrologic function and desirable vegetation, and little to no tree encroachment.[333]

The lack of current healthy conditions on grasslands and the need for enhanced protection can be traced to livestock grazing, but again, the Final EIS fails to disclose this connection. Failing to acknowledge the baseline causes of the issues that the proposed action seeks to address turns a blind on to not only the source of environmental degradation, but to potential solutions to respond to those causes. This failure to acknowledge the root causes of the current degraded environmental condition violates NEPA.

Similarly, the Final EIS underscores the importance of healthy riparian zones, areas that are preferred for grazing, and degraded, by livestock:

> Desired conditions for riparian zones along streams are that they are capable of filtering sediment, capturing and/or transporting bedload (aiding floodplain development, improving flood-water retention, improving or maintaining water quality), and providing ground water recharge within their natural potential. Their necessary physical and biological components provide habitat for a diverse community of plant and wildlife species including cover, forage, available water, microclimate, and nesting/breeding/transport habitat. Stream habitats and aquatic

[329] Rim Country Project Final EIS, Vol. 1, at 15-16.

[330] Rim Country Project Final EIS, Vol. 1, at 16.

[331] Rim Country Project Final EIS, Vol. 1, at 19.

[332] Rim Country Project Final EIS, Vol. 3, at 299.

[333] Rim Country Project Final EIS, Vol. 1, at 18-19.

> species depend upon perennial streams or reaches and their habitat is maintained by the watershed, soil, and riparian conditions within the ecosystem.[334]

The Final EIS states:

> Desired conditions for streams and aquatic habitats are to support native fish and other aquatic species, providing the quantity and quality of aquatic habitat within the natural range of variation. This includes increasing habitat complexity such as pools and large woody debris, reducing downcutting and sedimentation, improving riparian areas that provide channel stability and leaf litter, and stream shading to maintain water temperatures.[335]

Again, the Final EIS fails to disclose that achieving these desired conditions will be unlikely if livestock grazing continues along stream corridors.

In explaining why the proposed alternative that would eliminate the use of prescribed fire was eliminated from detailed study, the Final EIS admits that livestock grazing "would remove the herbaceous vegetation that helps carry a fire across the majority of the project area."[336] This is one of the most critical points in the effects of grazing on restoration. It will be difficult to impossible to restore fire to the landscape, the primary objective of restoration, if grazing inhibits or makes impossible prescribed burning, as it has inhibited a low-intensity fire regime in the past.[337]

The Final EIS also admits that increased stocking and/or increased area available to livestock would likely lead to a "decline in herbaceous species production and diversity, and possibly an increase in soil compaction across the project area …. [which is] contrary to the purpose and need to improve the abundance, diversity, distribution, and vigor of native understory vegetation to provide food and cover for wildlife, as well as move toward the desired conditions of improved condition and function of streams and springs, grasslands and connected montane meadows, watersheds, and forest ecosystems."[338]

However, the Final EIS fails to address the issue of overgrazing of upland and riparian ecosystems, despite admitting that "[c]onifer tree removal, restoration of fire, and *appropriate livestock numbers* are all necessary to restore structure and function of native grasslands."[339]

Further, the Final EIS fails to include important information to understanding grazing's historic impacts. For example, while the Range Specialist Report contains stocking rates over time, and

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[334] Rim Country Project Final EIS, Vol. 1, at 19; 265-66.

[335] Rim Country Project Final EIS, Vol. 1, at 19.

[336] Rim Country Project Final EIS, Vol. 1, at 66.

[337] *See, e.g.,* Rim Country Project Final EIS, Vol. 2, at 318-321 (repeatedly identifying livestock grazing as a disruptor of grassland ecosystems and fire regimes in the project area).

[338] Rim Country Project Final EIS, Vol. 1, at 66.

[339] Rim Country Project Final EIS, Vol. 2, at 321 (Appendix D, Section C) (emphasis added).

up to 2020, for the Coconino Nation Forest, it contains no such information for either the Apache-Sitgreaves or the Tonto National Forest.[340] Although the Final EIS acknowledges the Center's comment pointing out this lack of data, the agency neither redressed nor explained this omission.[341] The failure to include or explain the omitted data is arbitrary and capricious and demonstrates a failure to take the hard look NEPA requires.

Second, the Final EIS fails to disclose the cumulative impacts of the Rim Country project together with livestock grazing. The Final EIS fails to disclose that continued livestock grazing will undercut project efforts to restore ecosystems and restore riparian areas. For example, even though the Final EIS acknowledges that, in general, riparian areas and springs are in degraded condition and that the project is needed to restore these areas, the Forest Service also alleges that nothing is amiss, and the agency need not address livestock grazing in the Rim Project EIS: "The Forest Service has management standards in place to ensure desired conditions on the allotments are met along with meeting requirements of multiple use management."[342] If this statement were true, there would be no need to restore riparian areas or springs. The Final EIS, disclosing the deteriorated condition of riparian stream miles and springs, shows that whatever management standards are in place for AMPs are failing to protect those resoures.

Rather than disclose that livestock grazing will hamper recovery of riparian areas, the Final EIS asserts that restoring riparian areas will make possible *heavier grazing use of those areas*: "Stream and riparian area restoration would have a long-term *benefit to livestock grazing* management by *increasing forage* and by improving bank stability."[343] This assertion is arbitrary, and ignores that riparian restoration depends on livestock removal. The Rim Country Project's purpose is not to restore riparian areas to fatten cattle; it is to restore riparian areas' hydrologic and ecologic function, which decades of data demonstrate that, in the arid West and the project area, such restoration is generally not compatible with livestock grazing.

The Final EIS makes a similar statement regarding the restoration of understory vegetation, alleging that the project's logging will increase such habitat, which will in turn allow for increased grazing. "Depending on several factors such as the type of treatment and scale/size, restoration of understory species may increase forage production in different areas, which would increase livestock distribution and decrease utilization."[344] Thus, rather than protecting understory plants that can carry low-intensity fire, one of the project's goals, the Forest Service proposes to increase such plant production to benefit the livestock industry, again ignoring the damaging impacts livestock have on the understory.

The Final EIS also asserts that high-intensity logging will be beneficial in part because it will increase forage for livestock.

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[340] Range Specialist Report (2022) at 9 (Table 2).

[341] Rim Country Project Final EIS, Vol. 3, at 299.

[342] Rim Country Project Final EIS, Vol. 3, at 296.

[343] Rim Country Project Final EIS, Vol. 2, at 88.

[344] Rim Country Project Final EIS, Vol. 3, at 300.

> In research near the project area, herbaceous production dropped from greater than 650 pounds per acre to 100 pounds per acre when basal area increased above 50 square feet/acre (Pearson and Jameson 1967). In another study, grasses increased by more than 470 percent cover in high-intensity harvest units compared to a 53 percent increase in pre-treatment control units (Stoddard et al. 2011). Griffis et al. (2001) also found that the abundance of native grasses increased significantly along with treatment intensity throughout thinned and burned stands.
>
> The increase in forage within treatment areas would improve allotment conditions and *allow for more flexibility in grazing management systems*. Livestock distribution would improve because forage is more available in uplands. An increase in pasture graze periods would allow for additional pasture rest or deferment in other pastures within an individual allotment.[345]

Again, the EIS fails to address that livestock grazing helped cause the conditions that the Forest Service asserts high-intensity logging is needed to address, and that increased grazing pressure will likely lead to a repeat of those conditions. Again, the project's purpose is to restore ecosystems, not enrich the livestock industry. The Forest Service's response to comments on this score asserts that livestock management changes "are analyzed within the allotment management planning process and are not being addressed through this project."[346] Again, the Forest Service has designed a process to benefit livestock while failing to consider how reducing livestock numbers and/or distribution could achieve project goals, an arbitrary and capricious approach, and one that ignores the cumulative effects of livestock grazing on the project's goals.

Further, while the Forest Service admits that while livestock grazing played a key role in creating overstocked forests, the agency asserts, without basis, that the problem can solved without doing anything about livestock grazing. "While past [livestock] stocking in conjunction with other activities, such as fire suppression have contributed to the current conditions, actions, such as thinning and prescribed burning, proposed within this analysis will restore conditions."[347] This arbitrarily ignores that livestock will worsen conditions if not carefully managed, and that the Forest Service cannot address the problem of overstocked forests without addressing livestock grazing, one of its root causes.

Third, the Final EIS fails to address the impacts of redistributing livestock grazing via "adaptive management." The Final EIS asserts that livestock grazing will have minimal cumulative impacts with the proposed action because "[a]daptive management would guide post-treatment

[345] Rim Country Project Final EIS, Vol. 2, at 86-87 (emphasis added).

[346] Rim Country Project Final EIS, Vol. 3, at 293.

[347] Rim Country Project Final EIS, Vol. 3, at 295.

recovery."[348] The Final EIS also states that "[a]daptive management would continue to be used to adjust livestock management to meet annual forage production."[349]

However, the Final EIS fails to explain whether the allotment management plans use bona fide adaptive management to achieve the goals as set out in policy and regulations. Do the AMPs include hard triggers, for which the agency undertakes timely monitoring, to ensure that thresholds are not exceeded? Has the agency disclosed the impacts of implementing any mitigation measures if those thresholds are exceeded? Given the degraded conditions of the project area's riparian areas and other values damaged by livestock, it seems unlikely that the agency does so. Any subsequently prepared NEPA document must explain why and how the public can rely on the "adaptive management" included in AMPs to limit damage from livestock grazing within the project area.

Fourth, the Final EIS fails to consider as either part of an alternative or as a mitigation measure eliminating livestock grazing. The elimination of livestock grazing would help achieve at least four parts of the project's stated purpose. Decades of study demonstrate that removing livestock from significant portions of the Rim Country project area would help to: (1) increase forest resilience and sustainability; (2) improve terrestrial and aquatic species habitat; (3) improve the condition and function of streams, springs, and other aquatic and hydrological resources; and (4) restore riparian vegetation.[350]

Despite the fact that exclusion of livestock would help meet these project needs, the Forest Service refused to propose or analyze as a reasonable alternative taking such a step because, as the Final EIS repeatedly asserts in responding to comments on the issue, "Grazing management is outside the scope of the proposed action."[351] This is false, because grazing management to a great extent *caused* the problems the project seeks to address, and because improved grazing management would help *correct* those problems and meet the needs the project was designed to address. Simply taking livestock management off the table was arbitrary and capricious.

Even if the Forest Service concludes it need not address grazing management as part of an alternative, the Forest Service should have analyzed as a mitigation measure reducing or eliminating livestock from much of the project area, or from key landscapes (such as riparian areas). Failing to address such a mitigation measure deprived the public and the decision-maker of valuable information about the efficacy, costs, benefits, and tradeoffs of a key tool to achieve the project's purpose and needs.

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[348] Rim Country Project Final EIS, Vol. 3, at 295.

[349] Rim Country Project Final EIS, Vol. 2, at 87.

[350] Rim Country Project Final EIS, Vol. 1, at viii.

[351] Rim Country Project Final EIS, Vol. 3, at 291, 292, 296, 299, 300, 301. The excuse that the Forest Service offers, that "[l]ivestock management analyses are handled on an allotment-by-allotment basis," *id*. at 296, is arbitrary because nothing prevents the Forest Service from modifying grazing and AMPs as part of a broader project like Rim Country. The agency simply chose not to do so.

The majority of mitigation measure related to livestock grazing are meant to protect livestock grazing and its infrastructure from logging and burning, not protect ecosystems.[352] One measure, RM005, is likely to lead to additional (and undisclosed) habitat destruction. It reads: "The removal or exclusion of livestock water *would be mitigated* with alternative water sources, providing lanes to the water, or piping water to a livestock drinker."[353] While this implies that the Forest Service may exclude livestock from water in one area, it *will* "mitigate" by provide other water sources around which livestock will congregate and degrade habitat. No provision is made for reducing livestock numbers to actual reduce overall damage.

Further, the Forest Service fails to disclose that the impacts of providing an alternate source or water will be to move livestock damage from one place to another, a clear failure to take the hard look at environmental impacts that NEPA mandates. The use of water or supplements to redistribute livestock, as envisioned by RM005, has the potential to have significant impacts. Peer-reviewed studies show that attempts to lure cattle away from riparian areas are largely ineffective.[354] If the Forest Service has evidence that artificially provided water actually results in reducing impacts to aspen regeneration, we urge the agency to make that information available to the public. Further, using water to redistribute livestock often involves the development of natural springs or the construction of miles of pipeline, both of which have potentially significant financial and ecological costs (the latter of which include making water less available for wildlife and/or degrading aquifers and riparian areas). In a landscape where livestock are nearly ubiquitous, upland sites where grazing is currently limited by water scarcity are often the only places where relatively undisturbed, native vegetation can be found. Historically, the provision of livestock water to such sites has caused livestock to degrade upland soils, vegetation, wildlife habitat, scenery, and aesthetic qualities.[355] The Forest Service must disclose these damaging impacts in any subsequently prepared NEPA document.

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[352] *See* Rim Country Project Final EIS, Vol. 2, Appx. C, at 281-82 (measures RM001, RM002, RM003, RM007).

[353] Rim Country Project Final EIS, Vol. 2, Appx. C, at 281 (emphasis added).

[354] *See* L.D. Bryant, *Response of Livestock to Riparian Zone Exclusion*, Journal of Range Management, Vol. 35, No. 6 (Nov. 1982), pp. 780-785 (concluding that "Neither salt placement nor alternate water location away from the riparian zone influenced livestock distribution appreciably"), attached as Ex. 20. *See also* J. Carter et al., *Upland Water and Deferred Rotation Effects on Cattle Use in Riparian and Upland Areas*, Rangelands, Vol. 39 (2017), 112, 117 (concluding, based on a four year study of an allotment in Utah that "Upland water developments and supplements do not overcome the propensity of cattle to linger in riparian areas, resulting in overgrazing and stream damage, and therefore do not lead to recovery of these damaged systems."), attached as Ex. 21; R.L. Gillen, Cattle Distribution on Mountain Rangeland in Northeastern Oregon, Journal Of Range Management 37(6), November 1964, pp. 549-53 ("Water distribution was not correlated with grazing patterns in uplan[d] plant communities."), attached as Ex. 22.

[355] *See, e.g.*, Laurence A. Stoddart, et al., *Range Management*, Third Edition (1975) (concentration of livestock at water sources on arid rangelands causes severely denuded areas); Joan E. Scott, *Do Livestock Waters Help Wildlife?*, in Environmental, Economic, and Legal

And while replacement water for grazers would be mandatory, the agency makes *discretionary* any potential reduction in livestock grazing to protect ecosystems. RM004 provides in part: "Rest or deferment of a pasture by livestock may occur after the completion of ground disturbing activities, such as prescribed burning and mechanical thinning. Range management personnel will evaluate conditions to determine when adjustment to livestock management, such as rest or deferment of a pasture is needed. Several factors may be used to assist in these determinations, such as plant recovery, plant vigor, and size of the disturbed area in relation to the pasture size."[356] This measure contains no defined triggers; it leaves the decision about changing livestock management vague; it is not adaptive management. Under this measure, no changes to livestock management may occur at all.

Mitigation measure RM006 similar provides for robust review before any changes to livestock grazing, with no guarantee that any changes would occur, regardless of the cumulative impacts:

> Prior to the construction of any exclosure fences or barriers, which exclude forage and/or water, or the removal of a water source, such as earthen tanks or trough, there needs to be a review by the district ranger, range management personnel and other specialist to evaluate the extent and amounts that may be excluded on an allotment/pasture.[357]

The primary purpose of this mitigation measure is "[t]o ensure that changes to an allotment/pastures *will not hinder permittees' operations* …."[358] Again, the management of livestock in concert with the project are almost exclusively meant to *protect livestock grazing* and those who profit from it, not to fulfill the project's purpose, which it help restore the forest and riparian areas.

The measures the Forest Service proposes to adopt demonstrate that the agency considers fostering grazing management to benefits livestock as within the scope of the Rim Country Project. It is only *limiting* livestock to meet the project's purpose and need of forest and riparian restoration that the agency (arbitrarily) considers outside the project's scope.

> *Proposed Remedy*: The Forest Service should prepare a supplemental draft EIS that:

- Acknowledges and analyzes the role that livestock grazing played in creating the conditions that the Rim Country project purports to address;

- Analyzes, as an alternative or as a mitigation measure, permanently excluding livestock from riparian areas as a tool toward achieving project goals, including restoring springs, understory vegetation, and riparian areas;

Issues Related to Rangeland Water Developments, Proceedings of a Symposium (1997), pp. 493-507, attached as Ex. 23.

[356] Rim Country Project Final EIS, Vol. 2, Appx. C, at 281.

[357] Rim Country Project Final EIS, Vol. 2, Appx. C, at 282.

[358] Rim Country Project Final EIS, Vol. 2, Appx. C, at 282 (emphasis added).

- Discloses livestock grazing impacts on the restoration of understory species, and evaluates reducing stocking rates on upland areas to protect natural values there;

- Discloses adequately the cumulative impact of livestock grazing together with the impacts of the Rim Country project;

- Analyzes the effects of restoring riparian areas and uplands, assuming that any additional vegetation would not be made available to livestock;

- Discloses historic and current stocking rates in the Apache-Sitgreaves and Tonto National Forests;

- Discloses the impacts of "mitigation" measure RM005, which would involve providing "alternative water sources, provide lanes to the water, or piping water to a livestock drinker," all of which may have significant environmental effects; and

- Explains in details the adaptive management thresholds, monitoring requirements.

CONCLUSION

The Center for Biological Diversity appreciates your consideration of the information and concerns raised in our comments and highlighted in this objection.

We request a meeting to discuss potential resolution of issues raised in this objection, pursuant to 36 C.F.R. § 218.11(a). We hope that the Forest Service will use the objection process and such a meeting as opportunities to engage with stakeholders, including the objectors here, to develop a project that is legally and ecologically sound.

Sincerely,

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TABLE OF EXHIBITS

Exhibit 14. Reinhardt, E.D., R.E. Keane, D.E. Calkin, and J.D. Cohen. 2008. Objectives and considerations for wildland fuel treatment in forested ecosystems of the interior western United States. *Forest Ecology and Management* 256:1997-2006.

Exhibit 15. Fulé 2008. Does it make sense to restore wildland fire in changing climate? *Restoration Ecology* 16(4): 526-531.

Exhibit 16. Hampton et al. 2011. Estimating regional wood supply based on stakeholder consensus for forest restoration in northern Arizona. *Journal of Forestry* 109: 15-26.

Exhibit 17. MSO Leadership Forum Workgroup June 17 & 26, 2020 Workshop Notes," (July 7, 2020)

Exhibit 18. C. Joyner, U.S. Forest Service to J. Lininger, Center for Biological Diversity (April 10, 2015)

Exhibit 19. Fleischner, T. 1994. The Ecological Costs of Livestock Grazing in Western North America. Conservation Biology. Vol. 8, No. 3. Pp. 629-644.

Exhibit 20. L.D. Bryant, *Response of Livestock to Riparian Zone Exclusion*, Journal of Range Management, Vol. 35, No. 6 (Nov. 1982)

Exhibit 21. J. Carter et al., *Upland Water and Deferred Rotation Effects on Cattle Use in Riparian and Upland Areas*, Rangelands, Vol. 39 (2017)

Exhibit 22. R.L. Gillen, Cattle Distribution on Mountain Rangeland in Northeastern Oregon, Journal Of Range Management 37(6), November 1964, pp. 549-53

Exhibit 23. Joan E. Scott, *Do Livestock Waters Help Wildlife?*, in Environmental, Economic, and Legal Issues Related to Rangeland Water Developments, Proceedings of a Symposium (1997)