



May 13, 2026

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Submitted via project webpage portal and email to comments-pacificsouthwest-sixriversmadriver@usda.gov and to Kristen.lark@usda.gov

RE: Comments on the Draft Environmental Assessment, South Fork Mountain Vegetation Management Project — Project Activity Listing Service (PALS) #66933

Dear Ranger Lark,

Please accept these comments on the Draft Environmental Assessment (EA) for the South Fork Mountain Vegetation Management Project (“Project”) on behalf of the Environmental Protection Information Center (EPIC), the Klamath Forest Alliance, the Northcoast Environmental Center, and Safe Alternatives for our Forest Environment (S.A.F.E.). Our organizations represent over 40,000 members and supporters, who care deeply about protecting the wild places and rivers of California, particularly the Six Rivers National Forest and South Fork Mountain and the Mad and South Fork Trinity Rivers.

The South Fork Mountain ridge provides essential connectivity between the Mendocino, Shasta-Trinity, and Six Rivers National Forests. It forms the boundary between the Klamath Mountains and Coast Range geologic provinces. It hosts Late-Successional Reserves, Inventoried Roadless Areas, Critical Habitat for the federally threatened Northern Spotted Owl, the Wild and Scenic South Fork Trinity River, the Ruth Research Natural Area, and the headwaters of the South Fork Trinity and Mad Rivers. These watersheds are the ancestral homeland of the Nongatl, Wiyot, Lassik, and Wailaki peoples and lie within the territories of peoples enrolled in the Round Valley Indian Tribes, the Grindstone Indian Rancheria of Wintun-Wailaki Indians, and the Scotts Valley

Band of Pomo Indians of California. We acknowledge their stewardship since time immemorial and urge the Forest Service to engage in meaningful consultation with all affected Tribes.

South Fork Mountain clearly requires thoughtful fire management, but its ecological significance is at least as vital as its role in the broader fire strategy. This proposal fundamentally mismatches the scale of intervention to what the landscape can sustain: the commercial logging targets mature forests and proposes an unprecedented network of landings and roads across slopes the agency's own geology experts identified as unstable landslide terrain. We support ecologically grounded fire risk reduction efforts, such as outlined in the Trinity County Collaborative Whitepaper—but this timber sale, expedited through emergency authority and expanded by Forest Plan amendment, is not that.

Action here must conform to the Northwest Forest Plan (NWFP), the SRNF and STNF Land and Resource Management Plans (LRMPs), the Endangered Species Act (ESA), the National Forest Management Act (NFMA), the Clean Water Act (CWA), the Wild and Scenic Rivers Act (WSRA), the 2001 Roadless Area Conservation Rule, the Migratory Bird Treaty Act, and the National Historic Preservation Act. The Draft EA falls short of those standards and the proposed canopy removal does not meet the purpose and need of the project. We request meaningful changes — outlined below — before any decisions.

I. Proposed Action

The Draft EA proposes vegetation management on approximately 7,855 acres (7,187 acres National Forest System (NFS) lands) along a 40.4-mile ridgeline straddling the Six Rivers (SRNF) and Shasta-Trinity National Forest (STNF) boundary. The proposed action includes:

- Commercial logging on approximately 1,183 acres: thin-from-below to a residual basal area (RBA) of 120–200 ft²/acre depending on stand type and seral stage; spacing-based thinning of plantations on 37 acres (26-ft spacing); variable-density thin with clump retention on 78 acres.
- Overstory “sanitation” harvest on 58 acres targeting heavily mistletoe-infected (DMR 5–6) overstory white and red fir, with multi-entry treatments over 20+ years.
- Non-commercial hazardous-fuels reduction on approximately 5,585 acres: manual thinning of small trees and shrubs, lop-and-scatter, hand-pile and machine-pile burning, mastication, jackpot burning, and prescribed underburning.
- Continuous roadside fuelbreak along approximately 40.4 miles of ridgeline Forest Service Roads (FSRs) (1S23, 29N30, 1S05, 1S05D, 28N58, 6N01).
- A project-specific Forest Plan amendment to allow ground-based mechanized logging on slopes up to 50% (currently capped at 35% in the SRNF LRMP) on 166 acres.
- Borate (Sporax) fungicide application on freshly cut true-fir stumps across 730 acres for Annosus root rot suppression.

- Approximately 6 miles of existing closed temporary roads, plus 22 reopened temporary roads (11.7 miles) and 10 newly constructed temporary roads (3.1 miles), totaling roughly 14.8 miles of “temporary” road in addition to ~6 miles of existing routes (figures vary across the EA, Hydrology Report, and Silviculture Report — a discrepancy that itself warrants clarification).
- 141 newly constructed landings and reuse of 41 existing landings.
- Ground-based logging across all timber units. Skid trails are anticipated to occupy up to 15% of each commercial unit.

Land allocations affected (per Draft EA Table 21):

- South Fork Late-Successional Reserve (LSR RC-330): 3,222 acres of fuels treatment + 567 acres of commercial logging.
- Inventoried Roadless Areas: Chinquapin (15 acres fuels) and Pilot Creek (151 acres fuels + 7 acres logging).
- Riparian Reserves: 748 acres fuels + 55 acres logging.
- Tier 1 Key Watersheds: Upper South Fork Trinity River (2,588 acres fuels + 828 acres thinning) and Pilot Creek (252 acres fuels + 47 acres logging).
- NSO Critical Habitat Unit (CHU) CA-38 (Interior California Klamath subunit): 794 acres of suitable Nesting/Roosting and 1,220 acres of suitable Foraging within proposed treatment units.
- Wild and Scenic South Fork Trinity River and Mad River receiving waters; CWA § 303(d)-listed waterbodies (South Fork Trinity and Trinity Rivers, sediment-listed, with U.S. Environmental Protection Agency (EPA)-approved Total Maximum Daily Loads (TMDLs)).

A. Decision Framework: Emergency Authority and Forest Plan Amendment

The EA invokes the Fuels and Forest Health Emergency Situation Determination (“ESD”) authorized under § 40807 of the Infrastructure Investment and Jobs Act of 2021 (16 U.S.C. § 6592c) and triggered through Executive Order 14225 and Secretarial Memorandum 1078-006 (April 2025).¹ Approximately 50% of treatments fall within the ESD area, and the EA states this allows the Project to bypass pre-decisional administrative review under 36 C.F.R. Part 218. The EA also proposes a project-specific plan amendment to the 1995 SRNF LRMP allowing ground-based mechanized logging on slopes up to 50% on 166 acres.²

¹ Draft EA at pp. 5–7.

² Draft EA at pp. 17–19, 24–30; Soils Specialist Report (Knappek, March 31, 2026) at pp. 12, 27, 31.

We object to this framing.

The ESD does not eliminate the National Environmental Policy Act (NEPA) hard-look obligation.

Section 40807(c)(3) requires public comment during preparation of an EA or EIS, and (b)(3) requires emergency actions to remain consistent with the LRMP.³ The ESD does not relieve the agency of the duty to take a “hard look” (*Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989)), nor does it relieve the agency of the duty to consult under ESA § 7, comply with CWA §§ 303(d) and 401, the WSRA, the Roadless Rule, or the NWFP.

The Draft EA underplays controversy and significance. The Council on Environmental Quality (CEQ) NEPA implementing regulations require evaluation of context and intensity, including whether effects are highly controversial, whether the action establishes a precedent for future actions with significant effects, whether unique characteristics (Roadless Areas, Critical Habitat, Wild and Scenic Rivers, ecologically critical areas) are at issue, and whether there are cumulatively significant impacts.⁴ The proposed action triggers those factors. We submit that an Environmental Impact Statement (EIS) is the legally appropriate level of analysis, and at minimum the EA must be substantially supplemented before any decision.

II. Why South Fork Mountain Is Special

South Fork Mountain is the longest continuous ridgeline in California (and one of the longest in the world)⁵, running approximately 40 miles north–south. It is the structural hinge on which landscape-scale connectivity in the southern Klamath Mountains turns. The ridgeline forms the only continuous overland forest corridor linking the Yolla Bolly–Middle Eel Wilderness south, the Trinity Alps Wilderness northeast, the Six Rivers National Forest west, and the Shasta-Trinity National Forest east — providing irreplaceable passage for long-ranging species such as the Northern Spotted Owl, Pacific fisher, Pacific marten, black bear, and many others. As climate change compresses suitable habitat to higher elevations and northward latitudes, this corridor becomes more, not less, critical.

The ridge separates two geologic provinces (the Franciscan Complex and the Klamath Mountains, with the South Fork Mountain Schist forming the structural backbone). Annual precipitation on the west-facing (Mad River) slope reaches several feet⁶, with seasonal snowpack persisting on the upper third into late spring — a critical late-season cold-water source for downstream salmonid streams. The combination of high precipitation, deeply weathered clay-rich soils, schist-derived soils on the eastern face, and slope gradients regularly exceeding 35–60% makes this one of the most landslide-prone landscapes in California, as documented in the

³ 16 U.S.C. § 6592c(b)(3) and (c)(3).

⁴ 40 C.F.R. § 1508.27 (effects must be evaluated in terms of context and intensity); see also *Center for Biological Diversity v. Bernhardt*, 982 F.3d 723 (9th Cir. 2020) (uncertainty triggers EIS).

⁵ Soils Specialist Report at p. 13.

⁶ Soils Specialist Report at p. 15.

Forest Service’s own 1980 Landslide Hazard Analysis and confirmed in the November 2025 Geomorphic Analysis Report.

The South Fork Mountain LSR was designated to protect mature/old-growth forest characteristics. The LSR overlaps considerably with NSO Critical Habitat Unit CA-38 — redesignated CHU 11 (Interior California Coastal (ICC) subunits ICC 1 and ICC 2) under the 2012 Critical Habitat Final Rule — which was originally delineated to provide for at least 21 pairs of owls and for east-west dispersal from adjacent CHU CA-37 and north-to-south movement from the Yolla Bolly Wilderness to CHU CA-35.⁷ The Klamath–Siskiyou bioregion is a Global 200 ecoregion and one of seven Areas of Global Botanical Significance recognized by the International Union for Conservation of Nature (IUCN).⁸ The Klamath-Siskiyou Mountains support the strongest remaining “source populations” of NSO on the West Coast — making South Fork Mountain habitat directly relevant to the survival of the species across its range.

III. Specific Land Allocations: NWFP, Roadless Areas, LSRs, Wild & Scenic Rivers

A. South Fork Late-Successional Reserve (RC-330)

South Fork LSR encompasses approximately 43% of the project area (3,105 acres), with 567 acres of commercial thinning and 3,222 acres of fuels treatment proposed inside.⁹ Under the 1994 NWFP Standards and Guidelines, treatments inside LSRs must be designed to benefit or not retard the development of late-successional habitat. The Shasta-Trinity Late-Successional Reserve Assessment (LSRA) (1999) limits silvicultural treatments to those needed to develop late-successional characteristics in stands less than 80 years old (or younger than the unit-specific diameter at breast height (DBH) limits) and tightly restricts canopy reductions in older stands.

The Draft EA proposes thin-from-below to Retention Basal Area (RBA) 120–200 ft²/acre, with only 5% no-treat retention areas inside three NSO N/R units (Units 19, 39, 46). The EA does not adequately discuss: (i) the effect of pulling all treated acreage closer to threshold N/R conditions rather than past them; and (ii) whether residual canopy projections will fall below the NSO Recovery Plan’s recommended ranges.¹⁰

LSR-related concerns and requested modifications:

- Prohibit any new landing or temporary road construction inside LSR RC-330.

⁷ USDA Forest Service. Shasta-Trinity Late-Successional Reserve Assessment (LSRA), 1999; USFWS, Revised Northern Spotted Owl Recovery Plan (2011); 77 Fed. Reg. 71876 (Dec. 4, 2012) (NSO Critical Habitat designation).

⁸ DellaSala, D.A. et al. (1999). The Klamath-Siskiyou Ecoregion: A Global Center of Biodiversity. *Natural Areas Journal* 19(4):300–319.

⁹ Wildlife BA (Stragier 2026) at p. 21; Draft EA Table 21.

¹⁰ USFWS. Revised Recovery Plan for the NSO (2011), Recovery Actions 10 and 32.

- Demonstrate, with stand-level Forest Vegetation Simulator (FVS) modeling and post-treatment canopy projections, that absolutely no commercial thinning unit in LSR-330 will fall below 70% canopy cover where NSO N/R conditions exist.
- Adopt a project-wide 24" DBH retention diameter limit in LSR units (and 20" for Douglas-fir within LSR). The current language only states cutting trees >34" DBH "will be minimized" — that standard is unenforceable.
- Drop the 79 acres of NSO N/R thinning (Units 19, 39, 46). Logging in N/R habitat in fire-resilient stands is inconsistent with both the Recovery Plan and the LSRA.
- Apply thinning from below consistently across LSR units with at least 15–20% retained as untreated skips.

The September 24, 2025 Regional Ecosystem Office (REO) Letter of Concurrence (LOC) does not satisfy NEPA's hard-look requirement; LOCs are administrative concurrences that the unit-level prescription complies with NWFP Standards and Guidelines (S&Gs), not NEPA effects analyses.¹¹

B. Inventoried Roadless Areas (Chinquapin and Pilot Creek)

The Project includes 15 acres of fuels treatment in the Chinquapin IRA and 151 acres of fuels treatment plus 7 acres of thinning in the Pilot Creek IRA.¹² The 2001 Roadless Area Conservation Rule (36 C.F.R. § 294.13(b)) prohibits commercial timber cutting and road construction in IRAs except under narrowly construed exceptions.¹³

- The decision must specify a hard upper diameter limit (≤ 12 " DBH) and prohibit all commercial product removal in IRAs. "Generally, only small diameter" must be defined and wilderness characteristics must be maintained.
- Confirm in the Finding of No Significant Impact (FONSI) or Record of Decision (ROD) that no temporary roads, no new landings, and no use of mechanized equipment to remove logs of any size will occur in the IRAs.
- Provide the IRA Briefing Paper as a public Appendix to the EA.

C. Wild and Scenic South Fork Trinity River

The South Fork Trinity River harbors one of California's last remaining wild spring chinook salmon runs. It is a designated Wild and Scenic River under 16 U.S.C. §§ 1271–1287, with Outstandingly

¹¹ REO LOC, September 24, 2025 (Ehrman/REO). LOCs do not analyze cumulative effects, do not address site-specific Critical Habitat impacts, and are not a substitute for ESA § 7 effects determinations.

¹² Draft EA Table 21.

¹³ 36 C.F.R. § 294.13; *Wilderness Society v. U.S. Forest Service*, 630 F.3d 1173 (9th Cir. 2011) (en banc) (upholding 2001 Roadless Rule).

Remarkable Values (ORVs) for fisheries, scenery, recreation, and cultural resources.¹⁴ WSRA § 7(a) requires that no project may be undertaken that will have a “direct and adverse effect on the values for which such river was established.” 16 U.S.C. § 1278(a). The Draft EA contains no explicit ORV-by-ORV consistency analysis.

The Hydrology Specialist Report acknowledges that 7 of the 10 affected sub-watersheds (Hydrologic Unit Code 12, or HUC-12) will see increases in Equivalent Roaded Area (ERA) post-Project, including Bear Creek (Mad R.) increasing from 5.9% to 8.9%, Lost Creek (Mad R.) from 10.6% to 11.2%, and Barry Creek (Mad R.) from 9.6% to 11.0%.¹⁵ See section X.C, Cumulative Watershed Effects.

- Conduct and disclose a formal WSRA § 7(a) ORV consistency analysis for the South Fork Trinity River corridor.
- For the Mad River, document compliance with the SRNF LRMP visual quality objectives (Retention/Partial Retention) for the foreground viewshed from State Route 36.

D. CWA § 303(d)-Listed Waterbodies and Tier 1 Key Watersheds

See also Section X.C, Cumulative Watershed Effects.

The South Fork Trinity River is 303(d)-listed for sediment with an EPA-approved TMDL since 1998 calling for 50% sediment reduction.¹⁶ The Trinity River has an EPA-approved sediment TMDL.¹⁷ Treatments in Tier 1 Key Watersheds — including 828 acres of logging in the Upper South Fork Trinity Key Watershed — must not cause a net increase in sediment delivery, and the NWFP requires no net increase in roads in Key Watersheds.¹⁸

- Logging and heavy machinery, landing and “temporary” road construction or reconstruction must not occur in Tier 1 Key Watershed Riparian Reserves. Equipment exclusion zones must be adequate. Further described in section X.
- Demonstrate consistency with the South Fork Trinity Sediment TMDL using a recognized erosion model (WEPP, GRAIP, or equivalent) for each HUC-12 sub-watershed.
- Confirm coverage under the North Coast Regional Water Quality Control Board (NCRWQCB) Waiver of Waste Discharge Requirements for Timber Harvest Activities, with a copy of the certification appended to the FONSI or ROD.

¹⁴ Public Law 99-590, Nov. 3, 1986 (designating segments of the South Fork Trinity River); South Fork Trinity River Wild and Scenic River corridor management plan (USFS).

¹⁵ Hydrology Specialist Report (Dresser, April 1, 2026), Table 1.

¹⁶ U.S. EPA, South Fork Trinity River Sediment TMDL (1998), <https://www.epa.gov/tmdl>.

¹⁷ U.S. EPA, Trinity River TMDL for Sediment (2001).

¹⁸ USDA & USDI, Northwest Forest Plan ROD (1994), Aquatic Conservation Strategy, pp. C-7 to C-25.

IV. Habitat Connectivity — A Corridor Without Consideration: How South Fork Mountain's Landscape Function Disappears in the Biological Assessment and Evaluation

Neither document addresses habitat connectivity in any meaningful way. The Biological Assessment (BA) contains no analysis of South Fork Mountain's function as a landscape-scale wildlife corridor. The Biological Evaluation (BE) contains a single sentence acknowledging that "South Fork Mountain has been identified as a specific Management area in the Six Rivers LRMP that serves as LSRs and a connection between larger LSRs around the project area" — and then proceeds to analyze marten as if that corridor function is irrelevant to the effects determination. That one sentence is the entirety of connectivity analysis across both documents combined.

This is a significant omission. The ridge is the only continuous overland forest corridor linking multiple wilderness areas and national forests, and it provides **irreplaceable movement habitat** for NSO, fisher, marten, and other wide-ranging species that are directly analyzed in the BE. The BE acknowledges home ranges that, for male fishers, can exceed 9,000 acres — yet the analysis never asks what a 40-mile ridgeline of industrial ground disturbance does to movement through that corridor. The corridor is named in the LRMP, recognized in the species accounts, and then ignored when it comes time to assess effects.

The BA and BE rest on three core arguments:

The first is fire risk. The BA frames the project primarily as fire resilience work, arguing that reducing canopy bulk density (CBD) and ladder fuels will protect NSO habitat from stand-replacing wildfire over the long term. It invokes the 2020 August Complex — which burned the southern half of the project area — as proof of the fire threat the ridgeline faces. See Section

The second is habitat maintenance. The BA concludes that no NSO nesting/roosting or foraging habitat will be downgraded or removed, and that all 2,014 acres of treated NRF habitat will be "maintained" at current function post-treatment. This conclusion rests on the private-timberland take thresholds from the 2019 USFWS guidance as the operative definition of what constitutes maintained versus degraded habitat — a legal and scientific problem the comment letter addresses at length.

The third is NSO Recovery Plan alignment. The BA cites four Recovery Actions (6, 10, 30, 32) and argues the project is consistent with each. The citations are largely superficial — for example, Recovery Action 32 calls for maintaining stands "characterized by large diameter trees, high amounts of canopy cover, and decadence components," and the BA cites this action while simultaneously proposing to reduce basal area 35–47% and cut trees down to a residual floor that sits at or near the private-land take-avoidance minimum.

The BE justifies each species determination with the same template: treatments are narrow, RPMs aka: Project Design Features (PDFs) are in place, large trees and CWD are retained, and

NSO seasonal restrictions will incidentally protect other species when applied. Every species analyzed — goshawk, fisher, marten, bats, frogs, salamander, bumble bee — receives a "may affect, not likely to contribute to a trend toward federal listing" determination using largely identical reasoning regardless of the species' specific habitat requirements or the actual survey record.

What neither document does is engage with the cumulative disturbance footprint — 141 landings, up to 14.8 miles of roads, skid trails on 15% of every commercial unit — as a unified landscape-scale impact on a corridor that both documents implicitly acknowledge exists but neither analyzes.

Every wildlife-related PDC in Appendix A — spanning Sensitive Species, snails, TESP/Critical Habitat, and Wildlife categories — is structured around **known occurrences** and **site-specific buffers**. Protections for goshawk, bald eagle, bats, marten, fisher, and pond turtle apply only within narrow radii (0.25 to 0.5 miles) of confirmed nest, den, or roost sites; the Trinity shoulderband snail PDC triggers only if new sites are found. NSO measures maintain canopy thresholds and LOPs within delineated habitat units and a 100-acre nest grove. Botanical TESP PDCs are equipment exclusion zones around mapped occurrences.

None of these PDCs address how project-wide vegetation removal and disturbance affect wildlife **movement across the landscape**. There are no measures to maintain or avoid fragmenting travel corridors, no analysis of how cumulative treatment units interact to break connectivity, and no recognition of South Fork Mountain's function as a linkage between the Mendocino, Shasta-Trinity, and Six Rivers National Forests. The PDCs protect individual sites; they are structurally incapable of protecting the landscape-level connectivity on which wide-ranging species — fisher, marten, goshawk, NSO — depend.

V. The Agency's Seral-Stage Classification Understates the Ecological Maturity of These Stands

The Draft EA classifies 595 acres of treatment stands as "Mid Mature" (121–140 years old) and an additional 79 acres as "Mid Mature (N/R)" with a "second layer beginning to initiate." The agency draws the "Late Mature" line at stands exceeding 150 years old with two or more canopy layers and dominant conifers ≥ 30 " DBH. Under this classification, zero acres in the treatment area qualify as late mature, and the agency treats the entire 674 acres as available for commercial thin-from-below. This classification is not supported by the best available science.

A. The Agency's Own Data Contradicts Its Classification

The structural data in the project's Biological Assessment (BA) Table 2-4 tells a different story than the age-based label. The "Mid Mature" stands have a quadratic mean diameter (QMD) of 26 inches, basal area of 298 ft²/acre, and 65% canopy cover. The "Mid Mature (N/R)" stands are even more developed: 359 ft²/acre basal area, 71% canopy cover, and a developing second canopy layer. These basal area values are well within the range associated with late-seral

conditions in Klamath Province mixed conifer. The agency’s own description notes trees in these stands range from 24”–34” DBH with “large, scattered predominant conifers” in the overstory — language that describes an emergent overstory layer, a defining late-successional feature.

Notably, the agency’s own “Late Mature” threshold of 30” DBH falls within the 24–34” range it assigns to MM, meaning some trees in these stands already meet the agency’s diameter criterion for late maturity. The Botany Biological Evaluation (BE) classifies 5% of treatment units as “late mature” and notes surveys were conducted “primarily from within late- and mid-mature stands” — suggesting the botanist recognized late-mature conditions in stands the silviculturist classified as mid-mature. The EA itself acknowledges that “some late mature components are found as single tree or small patches within the earlier development stages.”

B. Fire Exclusion Has Suppressed Structural Development — That Is an Argument for Protection, Not Logging

The Silviculture Report makes a critical admission: “Many stands within the project area had larger diameter trees without necessarily showing the structure associated with a more advanced stand, likely due to the absence of fire in the landscape.” The agency is classifying stands by structural features, but acknowledging that the reason those structural features lag is fire exclusion — an anthropogenic management artifact. These stands would have developed multi-layered, late-mature characteristics by now if fire had been allowed to operate. The agency is using the consequences of its own management failure to justify a younger seral classification, which in turn allows commercial logging of stands that are ecologically — and by age — mature forest.

The dominant species — white fir (*Abies concolor*) — develops multi-story structure faster than Douglas-fir or ponderosa pine. White fir stands at 120+ years on mid-elevation Klamath sites are often structurally complex enough to function as late-seral habitat. The silviculturist’s own observation that a second canopy layer is “beginning to initiate” in the N/R stands confirms exactly this. The agency proposes to remove it.

C. The 150-Year Threshold Is Not Supported by the Best Available Science

The Silviculture Report cites Oliver and Larson (1990) for its seral-stage framework, but Oliver and Larson define seral stages by structural development, not fixed age cutoffs. The 150-year cutoff is an administrative convenience, not a scientifically derived threshold. Franklin et al. (2002) found that the transition to late-seral conditions in Pacific Coast mixed conifer can begin as early as 100–150 years and explicitly cautioned against rigid age thresholds.¹⁹ Franklin and Johnson (2012) defined “mature” forest as beginning around 80–100+ years and demonstrated that forests in this age range already provide significant old-growth functions.²⁰

¹⁹ Franklin, J.F., Spies, T.A., Van Pelt, R., et al. (2002). Disturbances and structural development of natural forest ecosystems with silvicultural implications, using Douglas-fir forests as an example. *Forest Ecology and Management* 155:399–423. [https://doi.org/10.1016/S0378-1127\(01\)00575-8](https://doi.org/10.1016/S0378-1127(01)00575-8)

²⁰ Franklin, J.F. & Johnson, K.N. (2012). A Restoration Framework for Federal Forests in the Pacific Northwest. *Journal of Forestry* 110(7):399–408. <https://doi.org/10.5849/jof.12-006>

Spies and Franklin (1991) documented Douglas-fir forests developing multi-layered canopies and functional old-growth characteristics well before 150 years on productive sites.²¹

Executive Order 14072 (2022) and the subsequent U.S. Department of Agriculture (USDA) / U.S. Department of the Interior (DOI) mature and old-growth inventory define “mature” forests as a distinct conservation category warranting federal protection. The definitions adopted in that inventory include forests considerably younger than 150 years.²² The USDA’s own initial inventory classified forests as “mature” based on structural attributes, not age cutoffs.²³

Implication. Classifying 674 acres as “mid-mature” when the structural data and peer-reviewed science indicate they are functionally late-mature allows the agency to sidestep the protective standards that would apply under the NWFPP’s LSR direction, the NSO Recovery Plan, and EO 14072. If correctly classified as late-mature, these stands would be largely excluded from commercial thinning under the Shasta-Trinity LSRA. The EA must re-evaluate its seral-stage classification using structural criteria.

VI. Northern Spotted Owl, Critical Habitat, and the Wildlife BA’s Survey and Analytical Deficiencies

A. The California Recovery Units Are the Linchpin of NSO Survival Range-wide

The Northern Spotted Owl was listed Threatened in 1990 and is currently warranted for uplisting to Endangered.²⁴ The owl is functionally extinct across most of Washington and large portions of Oregon, where populations have declined 65–85% on many study areas. Against this backdrop the Northern California Recovery Units take on extraordinary and irreplaceable conservation significance. The Klamath-Siskiyou Mountains maintain the strongest “source populations” of NSO remaining, representing the “principal zones of productivity” for the species.²⁵ What happens on South Fork Mountain is part of the demographic and dispersal architecture on which the survival of the species depends.

²¹ Spies, T.A. & Franklin, J.F. (1991). The structure of natural young, mature, and old-growth Douglas-fir forests in Oregon and Washington. USDA Forest Service Gen. Tech. Rep. PNW-GTR-285.

<https://www.fs.usda.gov/research/treesearch/5670>

²² Exec. Order No. 14072, 87 Fed. Reg. 24851 (April 22, 2022).

<https://www.federalregister.gov/documents/2022/04/27/2022-09138/strengthening-the-nations-forests-communities-and-local-economies>

²³ USDA & USDI (2023). Mature and Old-Growth Forests: Definition, Identification, and Initial Inventory on Lands Managed by the Forest Service and Bureau of Land Management.

<https://www.fs.usda.gov/sites/default/files/mature-and-old-growth-forests-tech.pdf>

²⁴ USDI Fish and Wildlife Service (2020). 12-Month Finding for the Northern Spotted Owl, 85 Fed. Reg. 81144 (Dec. 15, 2020) (warranted for uplisting).

²⁵ USFWS, Revised Recovery Plan for the Northern Spotted Owl (2011), Klamath Recovery Unit Description, pp. III-30 to III-32.

B. NSO Habitat in the Project Area

Within the analysis area, the BA documents 11,053 acres of suitable NSO N/R and 6,784 acres of F habitat on NFS lands. Within proposed treatment units alone: 794 acres of N/R and 1,220 acres of F would be treated.²⁶ This represents 7.17% of N/R and 17.95% of F habitat across the analysis area — a substantial footprint inside designated Critical Habitat for a species in range-wide collapse. **567 acres of the commercial units are in LSR-330, 417 are in Critical Habitat, and 59% of all new landing disturbance is proposed directly inside suitable NSO habitat.**

C. The Wildlife BA's "May Affect, Not Likely to Adversely Affect" Determination Is Internally Inconsistent and Procedurally Deficient

The Wildlife BA was prepared by a Biological Science Technician, not by a wildlife biologist. While reviewed by district and forest biologists, the absence of a biologist as lead author for a project of this scale affecting threatened species and designated Critical Habitat is itself a procedural concern.

1. The "may affect, not likely to adversely affect" (MANLAA) determination contradicts the BA's own occupancy assumption. At p. 20 the BA states: "All NSO activity centers and suitable N/R habitat are considered occupied due to limited recent survey history in the project area as surveys to USFWS protocol are required to determine if an AC or suitable N/R habitat is unoccupied."²⁷ Treating habitat as occupied and then concluding effects on 794 acres of N/R and 1,220 acres of F habitat are "insignificant and discountable" is contradictory on its face. Under U.S. Fish and Wildlife Service (USFWS) take-avoidance guidance, habitat-modifying activities in occupied N/R habitat during the breeding season require a "likely to adversely affect" (LAA) determination unless a Limited Operating Period (LOP) fully eliminates disturbance — and the project's LOPs at BA p. 15 expressly authorize operations to proceed concurrently with surveys in stands "deemed unoccupied from previous year's surveys" with only a 0.25-mile halt buffer for new detections. That is an LAA framework labeled "not likely to adversely affect" (NLAA).

2. The survey commitment is below protocol for the multi-year life of the project. The 2012 USFWS NSO protocol requires six visits per year to establish non-occupancy for habitat-modifying activities. The Project Design Criteria (PDCs) commit to "3-visit spot check surveys" in years 3 and 4 (BA p. 15). Three-visit spot checks are below the protocol's six-visit requirement for habitat modification. Beyond year 4, the BA acknowledges the agency will need to "evaluate scope of remaining work and level of appropriate surveys" through technical assistance — deferring compliance to later coordination. No unit should commence operations until that unit

²⁶ Wildlife BA (Stragier 2026) at p. 23, Table 7-3.

²⁷ Wildlife BA at p. 20 ("All NSO activity centers and suitable N/R habitat are considered occupied due to limited recent survey history in the project area as surveys to USFWS protocol are required to determine if an AC or suitable N/R habitat is unoccupied."); USFWS (2019), Take Avoidance and Analysis Guidance for Northern Spotted Owl.

has received protocol-compliant clearance for the year of operation, with that clearance documented in the project record.²⁸

3. The PDCs are unenforceable as written. The BA's PDCs (pp. 14–16) contain multiple loopholes that defeat their protective intent:

- Canopy retention applies only “where it currently exists.” PDCs say canopy “will be maintained at or above 60% where it currently exists” in N/R and 40% in foraging. The conditional “where it currently exists” provides no floor, no model output showing post-treatment canopy, and no unit-by-unit projection. Stands with currently lower canopy receive no protection at all.
- Diameter limits are aspirational. “Cutting trees above 34” DBH will be minimized outside of Late-Successional Reserves” — “minimized” is not a standard. There is no upper diameter cap and no commitment to retain large trees, contrary to NSO Recovery Plan Recovery Action 32, which directs maintenance of “high-quality spotted owl habitat stands... characterized as having large diameter trees.”
- 5% no-cut retention is below variable-density-thinning literature. The 5% no-cut retention in the three N/R units (19, 39, 46) is a fraction of the 15–30% range the variable-density-thinning literature supports for habitat heterogeneity.
- Landing locations are deferred to the timber sale contract. The BA acknowledges 141 new landings may affect 7.5 acres of N/R and 34 acres of F habitat (pp. 13–14) but treats this as “insignificant and discountable” because final locations are negotiated between purchaser and timber sale administrator (BA p. 39). NEPA requires a hard look at site-specific impacts; deferring location to the timber sale contract is the segmentation problem courts have repeatedly rejected.
- **15 new landings are proposed in NSO nesting/roosting habitat and 68 new landings in NSO foraging habitat — 83 of the 141 new landings, or 59% of all new landing disturbance, is proposed directly inside suitable NSO habitat.** Each of those 83 landings clears up to 0.5 acres to bare mineral soil. No DBH limit applies. No PDC restricts which trees are removed. No canopy retention standard governs landing clearing. The only constraint is that final locations will be “subject to agreement by the Forest Service and timber purchaser under the Timber Sale Contract or other agreements” — a process that occurs after project approval, outside public review, and without any disclosed trigger requiring a return to NEPA analysis if a landing is sited in a location that would remove high-value structural habitat. The BA then characterizes the combined effect of these 83 landings as “insignificant and discountable.” That conclusion is irreconcilable with the

²⁸ USDI Fish and Wildlife Service (2012). Protocol for surveying proposed management activities that may impact northern spotted owls (six visits per year required to establish non-occupancy for habitat-modifying activities); Wildlife BA at p. 15 (3-visit spot check surveys committed for years 3 and 4; “technical assistance with appropriate regulatory agency will be required” beyond year 4).

BA's own occupancy assumption. An agency cannot simultaneously presume all suitable NSO habitat occupied, propose 83 new industrial ground-disturbance points inside that habitat with no enforceable size, location, or structural constraints, and conclude the cumulative effect is beneath the threshold of significance — not without a site-specific analysis it has not performed and a disclosure it has not made.

- No PDC caps cumulative landing density per unit, per AC, or per watershed.
- Sanitation gap creation is functionally a seed-tree harvest. Pure sanitation units allow gaps ≥ 0.25 acres with retention of " ≥ 60 ft²/acre RBA" — that is a seed-tree harvest, not a thin-from-below, and the PDC does not cap total gap area or gap density per unit.
- LOP exceptions swallow the rule. PDCs allow operations after July 1 if surveys "confirm an activity center or previously occupied habitat is unoccupied or NSO are non-nesting" — but the BA simultaneously presumes all habitat occupied. The agency cannot have it both ways.

4. The 40% canopy floor in foraging habitat is the wrong target. See also Section VI.E. The 40% canopy threshold originates from private timberland Habitat Conservation Plans (HCPs), where it defines the minimum below which NSO habitat ceases to function. It is not appropriate as a management target on federal lands within an LSR and designated Critical Habitat. The applicable NWFP and Recovery Plan standard is to maintain and enhance late-successional conditions characterized by 60–80%+ canopy cover.²⁹ By applying private-land take thresholds as public-land management targets, the project inverts the legal framework.

5. Twenty-one of 33 activity centers were dropped from analysis. The BA acknowledges that 33 NSO activity centers intersect the analysis area but only 12 were carried forward.³⁰ Four were dropped because of "insufficient NRF habitat acres to maintain a northern spotted owl." That finding — that four ACs no longer have enough habitat to support a viable owl — is itself evidence of cumulative habitat loss across the landscape and an argument against further degradation, not a reason to exclude those ACs from analysis.

6. Several of the 12 analyzed activity centers are already below USFWS take-avoidance thresholds. That USFWS guidance for industrial timberlands establishes 250 acres N/R + 150 acres F (400 acres total) in the core area and 1,335 acres total in the home range as minimum thresholds for a viable activity center.³¹ The BA's Table 7-6 shows:

²⁹ Lesmeister, D.B., Sovern, S.G., Davis, R.J., Bell, D.M., Gregory, M.J., & Vogeler, J.C. (2019). Mixed-severity wildfire and habitat of an old-forest obligate. *Ecosphere* 10(4):e02696. <https://doi.org/10.1002/ecs2.2696>

³⁰ Wildlife BA at p. 26 (33 ACs intersect analysis area; only 12 carried forward; 4 dropped due to "insufficient NRF habitat acres to maintain a northern spotted owl").

³¹ Wildlife BA Table 7-6 at p. 31; Table 8-5 at pp. 41–42. USFWS take-avoidance guidance: 250 acres N/R + 150 acres F in core (400 acres total); 1,335 acres NRF total in home range. USDI Fish and Wildlife Service (2019), Take Avoidance and Analysis Guidance for Northern Spotted Owl.

- TRI0222 Bailey Canyon: home range 717 acres total Nesting/Roosting/Foraging (NRF) (vs. 1,335 required); core 150 acres (vs. 400 required) — functionally below recovery thresholds.
- TRI0188 Lamb: home range 1,623 acres NRF, but 23.5% of the home range NRF will be treated — within striking distance of the 25% USFWS take threshold.
- TRI0028 Swift Creek, TRI0260 Klondike Mine, and others have foraging deficits below the 1,085-acre F threshold in the home range.

Cumulative habitat reduction across these already-deficient ACs cannot be characterized as “insignificant.”

7. Habitat downgrade and removal not adequately quantified. The BA’s blanket conclusion that no acres will be downgraded or removed (Table 8-4) is unsupported. Cumulative effects of canopy reductions, basal area reductions to 120 ft²/acre, and skid trail/landing/road disturbance — at the unit and stand-element scale — must be reported. The EA must report by treatment unit and AC home range pre- and post-treatment acreages of N/R and F habitat with post-treatment functional condition (suitable, dispersal, capable, non-habitat).

8. Barred owl context. The presence of barred owls (>5 detected in the project area, >8 in the analysis area) does not justify habitat removal. Removing high-quality structural habitat reduces NSO’s already-narrow refugia.

D. Effects on Critical Habitat Are Not “Insignificant and Discountable”

Treatments overlap two CHU-11 subunits: Interior California Coastal (ICC) 1 and ICC 2. In total, 1,827 acres of NSO Critical Habitat will be treated: **655 acres** of Physical and Biological Feature 2 (PBF 2, **Nesting/Roosting**), 703 acres of PBF 3 (Foraging), and 470 acres of PBF 4 (Dispersal). The MANLAA determination rests heavily on the assertion that no PBFs will be downgraded or removed — but the BA’s own analysis acknowledges that landings (up to 41.5 acres in NRF habitat) and temporary roads (~2.17 acres in NRF habitat) will affect these areas. The cumulative effect of dispersed industrial-scale ground disturbance inside Critical Habitat is not adequately captured in a unit-by-unit functional-maintenance conclusion. This is especially true for Activity Centers already below threshold minimums. Further the agency is using minimum thresholds meant for industrial timberlands. The assumption that landings and temporary road construction is insignificant because they will be decommissioned and resemble small forest openings is flawed. These are near permanent scars that remove habitat and canopy which “decommissioning” will not heal.

E. The USFWS 2019 Take Avoidance and Analysis Guidance Is Inappropriate for Federal Lands

The Biological Assessment for the South Fork Mountain Vegetation Management Project relies on habitat classification thresholds drawn from the USFWS Take Avoidance and Analysis Guidance for Northern Spotted Owl (November 1, 2019) to support its determination that

proposed treatments will “maintain” Northern Spotted Owl nesting/roosting and foraging habitat without downgrade or removal. This reliance is legally and ecologically inappropriate for a project occurring on National Forest System lands within Late-Successional Reserves, Riparian Reserves, and designated Critical Habitat, and it fundamentally misapplies the regulatory framework governing federal land management obligations under the Northwest Forest Plan and the Endangered Species Act.

The 2019 Guidance Was Designed for a Fundamentally Different Regulatory Context

The 2019 USFWS guidance was developed to assist in the administration of Section 10 of the ESA — the incidental take permit and Habitat Conservation Plan framework that governs private timberland management. In that context, the habitat thresholds represent the minimum structural conditions below which NSO habitat ceases to function entirely and below which a private landowner cannot operate without incurring unlawful take. They are, by design and by legal definition, floor values — the lowest acceptable structural condition before habitat destruction and owl mortality become the presumptive legal consequence. The BA itself acknowledges this explicitly, stating that these thresholds “are utilized by USFWS when determining take on private timberlands,” before asserting without further legal or scientific justification that they are “still relevant on federal lands as the habitat definitions and requirements are the same, regardless of land ownership.”

That assertion is incorrect as a matter of law and as a matter of policy. The applicable management standard on National Forest System lands is not the minimum below which take occurs — it is the standard required by the Northwest Forest Plan, the Six Rivers and Shasta-Trinity National Forest Land and Resource Management Plans, and the 2011 Revised Recovery Plan for the Northern Spotted Owl, all of which require federal land managers to maintain and enhance late-successional forest conditions, not merely to avoid destroying them entirely.

The Northwest Forest Plan Requires Enhancement, Not Minimum Retention

The Northwest Forest Plan Standards and Guidelines establish that management within Late-Successional Reserves — which encompass 43 percent of the South Fork Mountain project area and nearly half of the commercial logging acres at 567 acres — must be directed toward protecting and enhancing the ecological conditions necessary to support late-successional and old-growth dependent species, including the Northern Spotted Owl. The objective in LSRs is not threshold maintenance but ecological trajectory: stands should be moving toward, not held at the margin of, the structural complexity that defines high-quality NSO habitat. Similarly, within Riparian Reserves, management must maintain riparian function and late-successional characteristics. Neither reserve allocation is designed to be managed at the minimum survivable habitat condition.

By adopting private-land take thresholds as its operative habitat targets, the BA has inverted this legal framework. A residual basal area prescription of 160 ft²/acre in N/R habitat units, set against the 2019 guidance threshold range of 150 to ≥180 ft²/acre, places post-treatment stand conditions at or near the lower bound of qualifying N/R habitat. This is precisely the condition the 2019 guidance was designed to prevent private landowners from falling below — it is not a

condition that federal land management is designed to target. The distinction is not semantic; it reflects the fundamental difference between a private take avoidance floor and a public land management obligation.

The 2011 NSO Recovery Plan Demands More

The 2011 Revised Recovery Plan for the Northern Spotted Owl reinforces this distinction with clarity. Recovery Action 32, which the BA itself invokes in support of the project, calls on land managers to “maintain and restore” well-distributed, older, and more structurally complex multi-layered conifer forests characterized by “large diameter trees, high amounts of canopy cover, and decadence components.” The Recovery Plan identifies the Dry Forest management zone — which encompasses the South Fork Mountain project area — and it specifically recommends restoring surrounding structure and old fire-tolerant trees. Critically, the Recovery Plan’s vision for habitat in this zone is not minimum threshold retention; it is the development and maintenance of structural conditions that support NSO persistence and recovery.

Recovery Action 10 further directs managers to “conserve spotted owl sites and high value spotted owl habitat to provide additional demographic support to the spotted owl population.” High-value habitat is defined in the Recovery Plan and USFWS guidance as nesting/roosting stands with basal areas at or above 210 ft²/acre and canopy closures of 60 to over 80 percent. Prescribing treatments in N/R habitat units to a residual basal area floor of 160 ft²/acre, and accepting that result as habitat “maintained,” is inconsistent with the conservation mandate for federal lands that the Recovery Plan articulates.

The Inversion of the Legal Framework

What the BA has done, in practical terms, is treat the private-land take avoidance floor as a federal public-land management ceiling. The 2019 guidance tells private landowners: do not go below these thresholds or you will be taking owls. The Northwest Forest Plan, the LRMPs, and the Recovery Plan tell federal managers: your obligation is to move stands upward in quality and structural complexity, and to maintain the conditions that support recovery, not merely to avoid the legal consequences that attach to private landowners who destroy habitat. By applying the former standard in place of the latter, the BA constructs a compliance argument that is legally circular: it uses a private-land harm-avoidance metric to satisfy a federal land enhancement obligation, and then concludes that because treatment conditions remain above the take floor, the project is consistent with NSO conservation requirements. This reasoning does not hold under the applicable legal framework.

Furthermore, because the 2019 guidance thresholds are being used to define what constitutes maintained versus downgraded habitat, any post-treatment stand condition that remains technically above the take floor is characterized in the BA as “no downgrade” — regardless of how significantly structural complexity, basal area, or canopy closure have been reduced within stands that were, prior to treatment, well above those floors and approaching high-quality habitat conditions. This effectively obscures from the analysis the magnitude of actual habitat degradation occurring within individual treatment units.

F. Landscape-Scale Cumulative Habitat Loss Across Recovery Units

The SFM Project cannot be evaluated in isolation. As noted in Section VI.C above, the BA's own cumulative-effects analysis is empty. The Six Rivers, Shasta-Trinity, and Klamath National Forests' current project queue and the April 2026 Quarterly NEPA Updates — combined with widespread private industrial clearcut logging in Northern California and 2025 wildfire/suppression actions — represent a landscape-scale disturbance footprint on remaining NSO habitat in the Northern California Recovery Units that no single project EA has yet analyzed in aggregate. Recent and ongoing projects include the 3.6-million-acre Klamath/Shasta-Trinity Prescribed Fire Project, South End, McKinney Fire Restoration, Seiad Restoration Thin, South Fork Mountain Fuelbreak, Big Ranch Community Risk Reduction Project (CRRP), Junction City CRRP, North Trinity County CRRP, Ash Creek, Trinity Divide and Lakehead Cooperative Fuelbreak, Pit/Curl, Root Fire Hazard Abatement, South Fork Sacramento, Rattail, Lightning Complex Restoration, Smith River Complex Wildfire Resiliency, Ixariyatuuuyship, Trinity Summit Restoration, Bowerman Thin, Snake, Middle Thin, Long Canyon, Rainier, Jack, Leftover, Lava Fire Salvage Decks Re-Offer, Longbow, Sunrise, Rattle, Ridge Road Decks, Lemonade Springs, Blue Hazard, Snackenburg, Argus, Butler Roadside, Blue Springs, The Flats, July Thin, Pronghorn, Head Fire Salvage Decks, Thompson Creek, and Dillon FS Decks. The cumulative degradation across this Recovery Unit has not been analyzed at the provincial scale. This piecemeal approach is precisely the segmentation NEPA prohibits.

Recommendations:

- Reanalyze all commercial treatment units against the habitat maintenance and enhancement standards of the Northwest Forest Plan and 2011 NSO Recovery Plan — not the private-land take avoidance floors of the 2019 USFWS guidance, which set the minimum below which habitat is destroyed, not the target federal land managers are legally required to meet.
- Prepare a project-specific Biological Assessment that addresses cumulative take of NSO across the California Recovery Units (CA Klamath and ICCU), considering all projects in the April 2026 Quarterly NEPA Update and timber sales authorized in the past 24 months.
- Reinitiate ESA § 7 consultation with USFWS on a project-specific basis. The 2025 informal consultation and resulting March 10, 2026 BA do not satisfy ESA § 7 cumulative-effects analysis requirements.
- Provide a map disclosing project treatments within LSR, Riparian Reserves, and Critical Habitat.

VII. Other ESA, Forest Service Sensitive (FSS), Survey and Manage (S&M), Management Indicator Species (MIS), and Migratory Wildlife

A. Pacific Fisher and Pacific/American Marten

See also Ridge-Top Wildlife Use & Mature Forest Connectivity Science Compendium directly related to the project.

Pacific fisher (*Pekania pennanti*) and American marten (*Martes caurina*) are R5 Forest Service Sensitive species on both Forests.³² The BE documents three fisher observations (1989, 1991, 2024) on the eastern edge of the analysis area and five marten detections (1978–2024), including one within treatment unit 39 and a 2024 detection on Mad River Road.³³ No den sites are known — but no protocol-level den surveys have been conducted. “No known den sites” is an artifact of survey absence, not evidence of absence.

Deficiencies:

- The BE’s 1.3-mile analysis area may be insufficient given fisher home ranges of up to 9,722 acres for males in northern California.³⁴ CWD retention thresholds (snags >20” DBH; logs >20” diameter and >10 ft long) must be specified by stand type and land allocation, not deferred to contract administration.
- The EA does not analyze the cumulative disturbance footprint of 141 proposed landings and ~14.8 miles of temporary roads on fisher and marten habitat. These species avoid ground disturbance, noise, and edge; landings and roads create persistent openings that fragment continuous canopy.
- The Six Rivers LRMP identifies South Fork Mountain as a connectivity corridor between the Corral, Chanchellula, and Yolla Bolla LSRs.³⁵ The EA proposes 567 acres of commercial thinning within LSR RC-330 but does not analyze how these treatments affect the north-south corridor function for fisher and marten.
- The August 2025 not-warranted finding for the Northern California–Southern Oregon (NCSO) DPS of fisher³⁶ reinforces — rather than diminishes — the importance of robust FS Sensitive protections and site-specific analysis.

³² USDA Forest Service, Pacific Southwest Region. 2013. Region 5 Regional Forester’s 2013 Sensitive Animal Species List.

³³ Wildlife Biological Evaluation (Rehm, Jan. 15, 2026, updated Mar. 10, 2026), pp. 15, 17.

³⁴ Zielinski, W.J., et al. (2004). Home range characteristics of fishers in California. *Journal of Mammalogy* 85(4):649–657. <https://doi.org/10.1644/BRB-012>

³⁵ Six Rivers National Forest LRMP (1995); Wildlife BE p. 15.

³⁶ USFWS, 90 Fed. Reg. 41355 (Aug. 25, 2025) (NCSO DPS fisher not warranted).

B. Northwestern Pond Turtle (*Actinemys marmorata*) — Proposed Threatened

On October 3, 2023, USFWS proposed listing the northwestern pond turtle as Threatened.³⁷ The BA states the Forest Service is “not voluntarily conferencing” under ESA § 7(a)(4). Given the documented downstream presence of pond turtles in the analysis area and the proximity of riparian-reserve treatments, we strongly urge voluntary § 7(a)(4) conferencing prior to any decision given the downstream effects.

C. Other Forest Service Sensitive Wildlife Species

Including American goshawk (*Accipiter gentilis/atricapillus*), pallid bat, Townsend’s big-eared bat, fringed myotis, foothill yellow-legged frog, southern torrent salamander (*Rhyacotriton variegatus*), western bumble bee, and Coastal giant salamander (*Dicamptodon tenebrosus*).

- American goshawk: The EA’s reliance on “no nest since 1985” is not a substitute for current pre-disturbance protocol surveys. Goshawks routinely re-occupy historic territories. Conduct a full goshawk protocol survey of all treatment units containing potential nest stands prior to commencement, with LOPs (Feb 15–Aug 31) and 0.5-mile buffers.
- Bats and snags: Retain all snags >20” DBH project-wide unless they pose imminent operational hazard. Cut-and-leave hazard snags wherever possible, especially large ones.
- Southern torrent salamander and foothill yellow-legged frog: Riparian-reserve Equipment Exclusion Zones (EEZs) of 25 ft inner buffer are insufficient for these species, all of which depend on cold, well-shaded headwater channels. Retain a minimum 100-ft no-treat buffer on all perennial and intermittent streams, regardless of fish presence. Add a stand-alone analysis for Coastal giant salamander.

D. Survey and Manage Species

The 2001 ROD for Survey and Manage and 2014 Moore-Connaughton direction govern S&M obligations.³⁸ Six known sites of Trinity shoulderband (*Helminthoglypta talmadgei*, Cat. D) occur in proposed Units 14, 17, 18, 20, 297, and 415. The EA states a re-visit in November 2025 found no live individuals or shells; resurvey is planned for spring 2026.

- Withhold any decision until mollusk resurveys are complete. November is outside the species’ active season and is not adequate to demonstrate absence.
- Confirm that Project Design Criteria S&M-1 through S&M-5 will be implemented as EEZs with marked, flagged buffers for the five S&M fungi/lichen sites (*Cantharellus subalbidus*, *Dendriscoaulon intricatum*, *Gomphus bonarii*, *Mycena overholtzii*, *Ptilidium californicum*).

³⁷ USFWS, 88 Fed. Reg. 68370 (Oct. 3, 2023) (NW pond turtle proposed threatened).

³⁸ USDA/USDI, 2001 ROD for Survey & Manage Standards & Guidelines.

E. Management Indicator Species and Migratory Birds

The SRNF and STNF LRMPs identify MIS and Management Indicator Assemblages (MIA) including pileated woodpecker, marten, black bear, deer, and snag/coarse woody debris (CWD)-dependent assemblages. The EA's MIS analysis is brief and conclusory. Each MIS must be analyzed at the project scale per the 1982 NFMA regulations applicable to these LRMPs (36 C.F.R. § 219.19 (1982)).³⁹

- Provide a quantitative MIS analysis at the project scale: pre- and post-treatment acres of suitable habitat for each MIS and assemblage, with cumulative effects context.
- Comply with EO 13186 (Migratory Birds) and the MBTA (16 U.S.C. § 703): conduct activities outside the breeding season (April 1–August 31).

VIII. Fisheries: Endangered Salmonids and Aquatic Species

ESA-listed and National Marine Fisheries Service (NMFS)-jurisdictional species in the analysis area include: Southern Oregon/Northern California Coast (SONCC) coho salmon (federally Threatened, designated Critical Habitat)⁴⁰; Klamath Mountains Province steelhead (*Oncorhynchus mykiss*); Upper Klamath–Trinity Chinook salmon Evolutionarily Significant Unit (ESU) (including spring-run); and the Northern DPS of green sturgeon (*Acipenser medirostris*) downstream.⁴¹ Klamath-Trinity spring-run Chinook were listed as endangered under the California Endangered Species Act (CESA) in 2021.⁴²

Specific concerns:

- The South Fork Trinity River is one of the last strongholds of self-sustaining wild spring-run Chinook in California. Coho regularly spawn in the Trinity River below the South Fork confluence and have been observed in the South Fork upstream as far as Butter Creek (per personal communications cited in NOAA Fisheries 2014 Recovery Plan).
- The MANLAA determination rests on the SRNF Fire and Fuels Programmatic and on the assertion that the project footprint contains no fish-bearing channels (minimum 0.9 mile to nearest critical habitat). However, sediment and turbidity move downslope; site-specific cumulative effects analysis is required.
- Stream temperature is the limiting factor for SONCC coho recovery in the Trinity basin. The EA must demonstrate, with stream-specific shade analysis (Heat Source modeling or

³⁹ 36 C.F.R. § 219.19 (1982 rule, applicable to the 1995 SRNF & STNF LRMPs).

⁴⁰ 70 Fed. Reg. 37160 (June 28, 2005) (SONCC coho); 64 Fed. Reg. 24049 (May 5, 1999) (SONCC coho Critical Habitat).

⁴¹ 71 Fed. Reg. 17757 (Apr. 7, 2006) (Southern DPS green sturgeon); the Northern DPS is a NMFS Species of Concern.

⁴² California Fish and Game Commission (2021), CESA listing of Klamath-Trinity Spring-run Chinook Salmon.

equivalent), that no project-related canopy reduction within 160 ft of a perennial stream would increase summer stream temperatures.

- Reinitiate ESA § 7 consultation with NOAA Fisheries on a project-specific basis. **Concurrence with a 2019 programmatic agreement does not automatically apply; the proposed action’s scale (1,183 acres of commercial logging plus 5,585 acres of fuels treatment, ~14.8 miles of “temporary” roads, and 141 new landings) is substantially different than typical projects under the programmatic.**

IX. Botany: Threatened, Endangered, Sensitive, and Survey & Manage Plants and Fungi

FS Sensitive plants known or expected in the project area include: *Cypripedium montanum* (mountain lady’s slipper), *Frasera fastigiata* (clustered green gentian), *Hosackia yollabollensis* (Yolla Bolly birds-foot trefoil), *Iliamna latibracteata* (California globe mallow), *Lilium rubescens* (redwood lily), *Lupinus elmeri* (Elmer’s lupine), *Sanicula tracyi* (potential), and *Scytinium siskiyouense* (potential).⁴³ Five S&M fungi/lichen sites are also documented.

Critical concern: only 16% of the 7,187-acre project was botanically surveyed at a phenologically appropriate time. The Botany BE explicitly states that approximately 16% of NFS lands were surveyed by botanists at a phenologically appropriate time.⁴⁴ Many proposed activity units were considered “unsuitable habitat” and not surveyed. This is inconsistent with FSM 2670.43, the S&M ROD requirement for pre-disturbance surveys for Category A and C species, and NEPA’s hard-look requirement.

- Conduct phenologically appropriate (April through August) pre-disturbance surveys covering 100% of treatment units that contain potential FSS or S&M habitat, including landings, “temporary” and skid trail corridors. Surveys must include lichens, bryophytes, and fungi groups.
- Apply consistent flag-and-avoid (EEZ) treatment to all FSS and S&M occurrences with species-specific buffers.
- Disclose the 2025 survey field forms and species lists in the project record.

X. Hydrology, Geology, Riparian Reserves, and the Aquatic Conservation Strategy

See also Riparian Reserve Science Compendium directly related to the project.

⁴³ Botany Biological Evaluation (Carlberg, April 8, 2026) at pp. 4–7.

⁴⁴ Botany BE at p. 5.

A. Riparian Reserves and ACS Compliance

The NWFP Aquatic Conservation Strategy (ACS) establishes nine objectives that all federal land actions must meet at the site, watershed, and landscape scales. The ACS is not satisfied by checkbox compliance.⁴⁵ The Draft EA’s Hydrology and Fisheries reports recite the nine objectives but provide only conclusory paragraphs that the project “maintains and restores” each.

Specifically problematic:

- The Draft EA proposes commercial thinning in 80–160 ft of Riparian Reserves of perennial streams, with new temp roads/landings allowed on intermittent and ephemeral channels. Best-available science demonstrates that 80-ft buffers are inadequate to protect water quality, large-wood recruitment, and microclimate functions on steep, high-rainfall terrain.
- The ACS does NOT distinguish between intermittent and ephemeral streams. Both fall under the same Riparian Reserve width direction (the height of one site-potential tree, or 100 ft slope distance, whichever is greater, on each side, per NWFP ROD pp. C-30 to C-31). The Project’s PDC structure that treats ephemeral channels with narrower buffers than intermittents is inconsistent with the NWFP.

Recommended minimum no-treatment buffers (by stream type and slope)

The EA’s perennial-stream buffer of 80 ft on each side falls well below recommended values for the steep, sediment-prone, geologically unstable terrain of South Fork Mountain.^{46,47,48} The literature supports the following minimums:

Stream type	Slope	Agency EEZ (Table 3)	NWFP ACS Riparian Reserve (each side)	Science-based recommended <i>minimum</i> buffer
Perennial fish-bearing	<10%	75 ft	300 ft	165 ft (50 m)
Perennial fish-bearing	10–40%	150 ft	300 ft	250 ft (75 m)
Perennial fish-	>40%	150 ft	300 ft	330 ft (100 m);

⁴⁵ NWFP ROD (1994), Aquatic Conservation Strategy, pp. B-9 to B-31; *Pacific Coast Federation of Fishermen’s Associations v. NMFS*, 265 F.3d 1028 (9th Cir. 2001).

⁴⁶ Kiffney, P.M., Richardson, J.S., & Bull, J.P. (2003). Responses of periphyton and insects to experimental manipulation of riparian buffer width along forest streams. *Journal of Applied Ecology* 40:1060–1076. <https://doi.org/10.1111/j.1365-2664.2003.00855.x>

⁴⁷ Gomi, T., Sidle, R.C., & Richardson, J.S. (2002). Understanding processes and downstream linkages of headwater systems. *BioScience* 52(10):905–916. [https://doi.org/10.1641/0006-3568\(2002\)052\[0905:UPADLO\]2.0.CO;2](https://doi.org/10.1641/0006-3568(2002)052[0905:UPADLO]2.0.CO;2)

⁴⁸ Dent, L., Vick, D., Abraham, K., Schoenholtz, S., & Johnson, S. (2008). Summer temperature patterns in headwater streams of the Oregon Coast Range. *JAWRA* 44(4):803–813. <https://doi.org/10.1111/j.1752-1688.2008.00204.x>

Stream type	Slope	Agency EEZ (Table 3)	NWFP ACS Riparian Reserve (each side)	Science-based recommended <i>minimum</i> buffer
bearing				debris-flow analysis required
Perennial non- fish-bearing	<10%	75 ft	150 ft	165 ft (50 m)
Perennial non- fish-bearing	10–40%	100 ft	150 ft	200 ft (60 m)
Perennial non- fish-bearing	>40%	100 ft	150 ft	250 ft (75 m)
Intermittent	Low–mod	50 ft	100 ft	100 ft (30 m)
Intermittent	Steep	50 ft	100 ft	165 ft (50 m)
Ephemeral	All	25–50 ft	100 ft (per NWFP)	100 ft (30 m) minimum
Granitic / serpentine / schist soils	All	Reduced per slope limits	Not specified	1.5× standard width
Unstable slopes / debris-flow zones	All	Not addressed	Not specified	Site-specific geotechnical analysis; no equipment in runout zone

Sources: Kiffney et al. 2003; Gomi et al. 2002; Dent et al. 2008; Olson et al. 2007; landslide-runout literature; Klamath Mountains and South Fork Mountain Schist geology.

B. The Problem of Logging Steep Slopes — Plan Amendment to 50%

The Project proposes a project-specific plan amendment to allow ground-based mechanized logging on slopes up to 50% (currently capped at 35%) on 166 acres. The Soils Specialist Report acknowledges that McHugh (1987) found forest harvest and roading significantly increased landslide rates in metamorphic, sedimentary, and igneous terrains in the Klamath Mountains across all slope classes, including the 40–60% class.⁴⁹

The November 2025 Geomorphic Analysis Report further confirms that the project area is underlain by the South Fork Mountain Schist Formation, the Galice Formation, and the Franciscan Formation — all known for instability, with “pervasive foliation planes that create

⁴⁹ McHugh, M.H. (1987). Landslide occurrence in the Elk and Sixes River basins, southwest Oregon. M.S. Thesis, Oregon State University; cited in Soils Specialist Report, Figure A-5.

persistent, large rotational–translational slide blocks” and “widespread ground instability present on the Franciscan Formation-dominated western slope of South Fork Mountain.”⁵⁰

The amendment rationale is inadequate.

- The Soils Report relies primarily on tethered logging studies (Visser & Stampfer 2015; Cavalli & Amishev 2015) — but the proposed action is non-tethered ground-based skidding. The single non-tethered study cited (Zamora-Cristales et al. 2014) found 7% bare-soil exposure on cut-to-length non-tethered forwarders even on 65% slopes — but on Western Oregon andesitic terrain, not on Franciscan/South Fork Mountain Schist.
- The EA does not analyze cumulative landslide risk from 141 new landings constructed primarily on a deep-seated landslide complex. Landings on schist-derived soils, especially where they intercept and concentrate runoff, are well-documented landslide initiation features.
- The non-significance finding for the plan amendment (“no or low impact”) is conclusory. 36 C.F.R. § 219.13 substantive requirements (sustainability, plant and animal diversity, multiple use, timber) require quantitative, comparative analysis.
- Withdraw the requested plan amendment. If 166 acres cannot be treated under existing slope limits, exclude them from the Project.

C. Cumulative Watershed Effects (CWE)

The Hydrology Specialist Report assesses CWE using the Region 5 ERA model across the ten HUC-12 sub-watersheds and concludes all ten remain below their Threshold of Concern (TOC) post-project.⁵¹ That conclusion is unreliable because the ERA inputs are fundamentally incomplete, the analysis omits mandatory LRMP analytical requirements, and the report fails to acknowledge that the entire project lies within a Tier 1 Key Watershed with an existing EPA sediment TMDL.

1. The Hydrology Report Drastically Understates the Project Disturbance Footprint

The report states the project “will use approximately 6 miles of old temporary roads and construct 1 mile of new temporary roads” — 7 miles total. The Draft EA and Silviculture Report disclose 22 reopened temporary roads (11.7 miles) and 10 newly constructed temporary roads (3.1 miles) — 14.8 miles combined. The hydrology report omits more temporary road mileage than it accounts for. This discrepancy is not explained anywhere in the record.

Separately, 141 new landings (up to 70.5 acres of high-disturbance compacted ground) and 41 reused existing landings are entirely absent from the ERA modeling. Landings generate disproportionate sediment per acre relative to other harvest disturbance. Their ERA contribution is uncalculated and undisclosed across all ten sub-watersheds. No stream crossing inventory is

⁵⁰ Geomorphic Analysis Report (Wellik, November 26, 2025), pp. 3–7; South Fork Mountain Landslide Hazard Analysis (USFS 1980).

⁵¹ Hydrology Specialist Report (Dresser, April 1, 2026), Table 1; Region 5 ERA model documentation.

provided despite the scale of the road network. These omissions render the ERA outputs unreliable.

2. Tier 1 Key Watershed Status and Applicable Standards

The project area lies within the South Fork Trinity River Tier 1 Key Watershed, as confirmed by the Forest Service’s own Upper South Fork Trinity River – Happy Camp Creek Watershed Analysis (USFS 1999): “The entire Watershed Analysis area is within the South Fork Trinity River Tier 1 Key Watershed.”⁵² The hydrology report never mentions Key Watershed status, never applies Key Watershed standards, and never demonstrates that the project supports Key Watershed goals — a prerequisite for any vegetation management under the NWFP and the STNF LRMP.⁵³

The NWFP Record of Decision states that Key Watersheds are “the highest priority for watershed restoration” and that vegetation management within Key Watersheds **will only occur if it supports Key Watershed goals**.⁵⁴ The ROD further requires no net increase in road density in Key Watersheds and that all stream crossings be designed to accommodate the 100-year storm flow and debris in transport.⁵⁵ The hydrology report addresses none of these requirements.

3. The STNF LRMP Five-Factor CWE Requirement Is Unmet

The STNF Land and Resource Management Plan requires that CWE analyses consider five factors: (1) adjacent private and public lands; (2) the sensitivity of the watershed and stream channel; (3) the beneficial uses of the water; (4) past impacts (both natural and activity caused); and (5) all proposed and reasonable foreseeable future activities in the watershed.⁵⁶ The hydrology report fails to adequately address any of these:

- Adjacent lands: Private timber harvest is mentioned generically but no specific adjacent activities are identified. The Rattail Project (decided June 10, 2025; 1,500 acres treatment, 630 acres commercial logging, 3.41 miles new temporary road, 50+ landings), which shares receiving waters with Barry Creek, Bear Creek, Ruth Lake, and Lost Creek sub-watersheds, is entirely omitted despite meeting the report’s own inclusion rule.⁵⁷
- Watershed and channel sensitivity: No sensitivity ratings, channel condition assessments, stream type classifications, or geomorphic sensitivity evaluations are provided for any of the ten sub-watersheds.

⁵² USDA Forest Service (1999). Upper South Fork Trinity River – Happy Camp Creek Watershed Analysis. Hayfork Ranger District, Shasta-Trinity National Forest, March 1999, Section 1, p. 1.

⁵³ USDA & USDI (1994). Northwest Forest Plan ROD, Standards and Guidelines, pp. C-7 to C-25; USDA Forest Service (1995). Shasta-Trinity National Forest LRMP.

⁵⁴ USDA & USDI (1994). Northwest Forest Plan ROD, Aquatic Conservation Strategy, Key Watershed direction, p. B-19.

⁵⁵ USDA & USDI (1994). Northwest Forest Plan ROD, p. C-32 (Key Watershed road standards). See also USFS (1999), Upper South Fork Trinity River Watershed Analysis, Section 3.

⁵⁶ USDA Forest Service (1995). Shasta-Trinity National Forest LRMP, Chapter 4, Water Resources direction.

⁵⁷ Hydrology Specialist Report Methods section (foreseeable-future projects inclusion rule).

- Beneficial uses: Entirely absent. The SF Trinity River is designated Wild and Scenic with ORVs for fisheries and supports federally Threatened SONCC coho salmon, steelhead, and spring-run Chinook. The Mad River supplies drinking water. None of these beneficial uses are identified or analyzed.
- Past impacts: The 2020 August Complex Fire is mentioned but not quantified. No comprehensive disturbance history integrates natural and human-caused impacts.
- Foreseeable future activities: The Rattail Project is omitted despite meeting the inclusion rule.

4. FSH 2509.22 Chapter 20 Governs Allowable Disturbance

The STNF LRMP directs that the size or extent of detrimental soil disturbance affecting hydrologic function is determined by Chapter 20 of the R-5 FSH 2509.22.⁵⁸ The ERA-only approach likely falls short of the FSH’s full protocol. The ERA model is explicitly a screening tool requiring field verification when thresholds are approached — that verification was not conducted.⁵⁹

5. Legacy Sediment Sources Are Unanalyzed

The hydrology report acknowledges that legacy sediment source inventory is required under Order No. R1-2024-0012⁶⁰ but performs none. No road segments are identified, no sediment volumes estimated, no receiving stream courses located, and no site-specific remediation plan or timeline is provided. The ERA model does not capture existing sediment delivery, meaning these legacy sources are invisible in the CWE analysis.

6. Sediment TMDL Consistency Not Demonstrated

The South Fork Trinity River has an EPA-approved sediment TMDL (1998) calling for a 50% sediment reduction.⁶¹ The hydrology report never mentions this TMDL. For a project proposing 14.8 miles of temporary roads, 141 new landings, and 1,183 acres of commercial logging within the SF Trinity’s contributing watershed, this is a standalone compliance gap.

7. Barry Creek and Lost Creek Are Critically Close to TOC

Even using the report’s incomplete inputs, Barry Creek sits at 11.0% ERA against a 13.4% TOC and Lost Creek at 11.2% against a 13.5% TOC — margins of 2.4% and 2.3% respectively.⁶² Incorporating the correct road mileage, 141 new landings, and the Rattail Project’s contribution

⁵⁸ USDA Forest Service (1995). STNF LRMP; R-5 FSH 2509.22, Chapter 20.

<https://www.fs.usda.gov/im/directives/field/r5/fsh/2509.22/r5-2509-22-all-2.pdf>

⁵⁹ Region 5 ERA Model documentation, field-verification trigger when ERA approaches TOC.

⁶⁰ North Coast RWQCB, General Waste Discharge Requirements Order No. R1-2024-0012.

⁶¹ U.S. Environmental Protection Agency (1998). South Fork Trinity River Sediment TMDL.

<https://www.epa.gov/tmdl>.

⁶² Hydrology Specialist Report, Table 1 (Barry Creek 11.0% / TOC 13.4%; Lost Creek 11.2% / TOC 13.5%).

would likely push both watersheds to or above TOC. The ERA model requires field verification when TOC is approached — none has been conducted.⁶³

8. The ERA Model’s Own Limitations Are Not Addressed

The hydrology report acknowledges that the ERA model “is mostly an office exercise, based only on management-related hillslope disturbance. It does not directly assess physical or biological processes in stream channels.” The report’s conclusion that effects are “very small and probably undetectable downstream” is based on a model the report itself describes as limited, using inputs the report itself understates, for a watershed already impaired for sediment.

9. The 1999 Watershed Analysis Identified Ongoing Road-Related Impacts

The Forest Service’s own 1999 Watershed Analysis found that 44% of stream crossings have diversion potential and nearly 66% of 316 stream crossing sites serve as active sediment sources.⁶⁴ That analysis recommended reducing cumulative road impacts through decommissioning and storm-proofing. The current project proposes to add 14.8 miles of temporary roads and 141 new landings to this same network without reconciling with the 1999 findings.

Recommendations:

- Reconcile the 7-mile road figure with the 14.8 miles disclosed in the EA and Silviculture Report and rerun ERA calculations for each affected sub-watershed.
- Calculate and disclose the ERA contribution of all 141 new landings and 41 reused landings, distributed by sub-watershed.
- Add the Rattail Project to the foreseeable-future baseline for Barry Creek, Bear Creek, Ruth Lake, and Lost Creek.
- Conduct a complete stream crossing inventory consistent with Key Watershed 100-year storm standards.
- Prepare a site-specific legacy sediment inventory as required under Order No. R1-2024-0012.
- Conduct field-based watershed condition assessments in Barry Creek and Lost Creek before project implementation.
- Perform the five-factor CWE analysis required by the STNF LRMP.

⁶³ Region 5 ERA Model documentation, field-verification trigger when ERA approaches TOC; USDA Forest Service, R-5 FSH 2509.22, Chapter 20.

⁶⁴ USDA Forest Service (1999). Upper South Fork Trinity River Watershed Analysis, Section 3, pp. 29–30. Based on TCRCD 1998 road inventory.

- Demonstrate consistency with the SF Trinity River sediment TMDL using a recognized erosion model.
- Demonstrate that the project supports Key Watershed goals as required by the NWFP and STNF LRMP.

D. PDCs and BMPs as Additive Impact

See also BMP Science directly related to the project.

PDCs and Best Management Practices (BMPs) reduce impacts; they do not eliminate them.⁶⁵ In already-impaired (303(d)) watersheds where listed species are at risk, the appropriate response is to avoid impacts, not to mitigate them.

XI. “Temporary” Roads and Landings: A Persistent Industrial Footprint

See also Landings, Skid Trails and “Temporary” Roads Science Compendium directly related to the project.

The Project would authorize approximately 14.8 miles of newly constructed or reopened “temporary” roads (in addition to ~6 miles of existing closed temporary routes) and 141 new landings, each up to 0.5 acre, totaling approximately 70.5 acres of new ground disturbance. The Forest Service represents these as “temporary” and “rehabilitated after use,” but peer-reviewed science establishes that the ecological footprint is, in practice, anything but temporary.

A. Sediment Production from “Temporary” Roads

Forest roads are the dominant source of management-related sediment delivery in steep Pacific Coast watersheds. Reid and Dunne (1984) found road surfaces in the Pacific Northwest produce sediment at rates 1–3 orders of magnitude greater than undisturbed forest, with heavy-use logging roads producing more than 100 times the background rate.⁶⁶ Wemple et al. (2001) documented that forest roads — “temporary” and otherwise — extend the channel network by capturing surface runoff, delivering both water and sediment to streams that would not otherwise be hydrologically connected to the road.⁶⁷ These effects begin as soon as the road is constructed and persist for years to decades after the sale closes.

⁶⁵ Rashin, E.B., Clishe, C.J., Loch, A.T., & Bell, J.M. (2006). Effectiveness of timber harvest practices for controlling sediment related water quality impacts. *JAWRA* 42(5):1307–1327. <https://doi.org/10.1111/j.1752-1688.2006.tb05606.x>

⁶⁶ Reid, L.M. & Dunne, T. (1984). Sediment production from forest road surfaces. *Water Resources Research* 20(11):1753–1761. <https://doi.org/10.1029/WR020i011p01753>

⁶⁷ Wemple, B.C., Swanson, F.J., & Jones, J.A. (2001). Forest roads and geomorphic process interactions, Cascade Range, Oregon. *Earth Surface Processes and Landforms* 26:191–204. [https://doi.org/10.1002/1096-9837\(200102\)26:2<191::AID-ESP175>3.0.CO;2-U](https://doi.org/10.1002/1096-9837(200102)26:2<191::AID-ESP175>3.0.CO;2-U)

B. Compaction and Hydrologic Disconnection Persist for Decades

Soil compaction on skid trails, landings, and roads in Pacific Northwest forests has been documented to persist for 40–80+ years.⁶⁸ Compacted soils on landings exhibit reduced infiltration, root penetration, and microbial activity; recovery requires subsoil tillage and decades of biological activity, not simple ripping with a backhoe. The Soils Specialist Report itself acknowledges that detrimental disturbance “may take decades to recover.”⁶⁹

C. Landings as Landslide Initiation Features

Landings concentrate runoff and remove vegetative reinforcement, making them disproportionately frequent landslide initiation features in steep, high-rainfall terrain underlain by clay-rich soils — the conditions on South Fork Mountain. The November 2025 Geomorphic Analysis Report identifies widespread instability on the Franciscan Formation western slope, where 141 new landings and roads would be constructed.

D. Invasive Plant Vectors

Roads and landings are documented primary vectors for invasive plant introduction.⁷⁰ The Project’s own Invasive Plant Risk Assessment rates road-corridor and landing risk as HIGH and documents 112 invasive plant sites within the project boundary, including five cheatgrass populations — a fire-adapted invasive grass that increases fire frequency and severity in the very stands the Project purports to protect. See Section XVIII, Invasive Plants.

E. NSO and Wildlife Effects from Road Disturbance

Even “temporary” roads create persistent edge effects, increased predation risk, and disturbance during NSO breeding season; barred-owl encroachment is associated with road density and forest fragmentation.⁷²

F. Landing Density: An Industrial Footprint on an Ecological Ridgeline

The sheer concentration of proposed ground disturbance has no precedent in the project record. The Project proposes 182 total landings (141 new plus 41 existing) along a 40.4-mile ridgeline. Simple arithmetic shows the scale: 182 landings distributed across 40.4 miles equals one landing approximately every 1,170 feet — or roughly every one-fifth of a mile. For the 141 new landings alone, the average spacing is approximately every 1,510 feet.

⁶⁸ Page-Dumroese, D.S., et al. (2006). Soil disturbance impacts on forest soils. USDA-FS PNW-GTR-714.

<https://www.fs.usda.gov/research/treesearch/8703>

⁶⁹ Soils Specialist Report (Knapik 2026) at p. 24.

⁷⁰ Christen, D. & Matlack, G. (2006). The role of roadsides in plant invasions: a demographic approach. *Conservation Biology* 20(2):385–391. <https://doi.org/10.1111/j.1523-1739.2006.00315.x>

⁷¹ Gelbard, J.L. & Harrison, S. (2003). Roadless habitats as refuges for native grasslands. *Ecological Applications* 13:404–415. [https://doi.org/10.1890/1051-0761\(2003\)013\[0404:RHARFN\]2.0.CO;2](https://doi.org/10.1890/1051-0761(2003)013[0404:RHARFN]2.0.CO;2)

⁷² Wiens, J.D., et al. (2014). Competitive interactions and resource partitioning between northern spotted owls and barred owls in western Oregon. *Wildlife Monographs* 185:1–50. <https://doi.org/10.1002/wmon.1009>

The BA discloses 15 new landings are proposed in NSO nesting/roosting habitat and 68 new landings in NSO foraging habitat — 83 of the 141 new landings, or 59% of all new landing disturbance, is proposed directly inside suitable NSO habitat.

At up to 0.5 acre each, the 141 new landings represent approximately 70.5 acres of freshly cleared, graded, and compacted ground. Add the 14.8 miles of temporary roads (each disturbing a minimum 12–16 ft running surface plus cut-and-fill slopes), the skid trails occupying up to 15% of each commercial unit, and the 20.5 acres of reused existing landings — and the cumulative footprint becomes enormous. This is not a fuels project; it is an industrial logging operation on one of the most ecologically sensitive ridges in California.

This density of landings exceeds standard Forest Service guidance for landing spacing in steep terrain. Typical landing intervals in Region 5 timber sales on comparable slopes range from 800 to 1,500 feet between skid trails, with landings far less frequent. Here, every fifth of a mile along a 40-mile ridgeline would be scraped to mineral soil, compacted, used as a log deck, and then nominally “rehabilitated” — a process that peer-reviewed research shows takes 40–80 years to restore soil function.

The agency has not disclosed the locations of these 141 proposed landings in any publicly available map or GIS dataset. The Peterson (2026) Map Series shows only existing landings. The public cannot meaningfully comment on the hydrologic, geotechnical, botanical, and wildlife impacts of 141 new ground-disturbance points whose locations the agency has not disclosed.

G. Post-Fire Green Tree Retention: A Critical Gap in Project Design

The project’s own Silviculture Report acknowledges that stands structurally identical to those being commercially thinned burned with 100% mortality in the 2020 August Complex. Surviving green trees in and adjacent to the southern project area are not abundant background forest — they are scarce, high-value remnants in a landscape the EA itself describes as “an ocean of fire-killed snags.” Design criterion HFR-3 recognizes this explicitly: south of SR 36, cutting live trees is prohibited where canopy cover is below 40% in high-severity post-fire footprints, regardless of DBH, species, or prescription. That prohibition exists because the agency understood that removing live trees from an already-depleted canopy works directly against the post-fire recovery the project claims to support.

HFR-3 does not apply to landing construction or temporary road clearing. Those activities are classified as connected actions, subject only to the aspirational language in the Silviculture Report that landings will “minimize cutting of late seral components” — language that binds no one and is enforced by no PDC. A landing of up to 0.5 acres, sited by operational convenience and finalized by purchaser agreement after project approval, can remove every surviving green tree within its footprint in the southern project area with no constraint equivalent to HFR-3. The EA contains no analysis of how many live trees occur within potential landing and road footprints south of SR 36, no canopy cover baseline for those specific locations, and no disclosure of what their removal means for an area where the agency’s own 40% canopy threshold is likely already at or below the line.

The commercial thinning units south of SR 36 that would require new landing construction or temporary road clearing in areas where surviving canopy is at or below 40% should be dropped from the Proposed Action entirely. The EA's own logic compels this conclusion. The stated purpose of commercial treatment in the southern project area is to reduce fire risk and accelerate recovery — but where canopy is already below 40%, the August Complex has already accomplished the former, and the latter requires retention and protection of every surviving green tree, not their removal for operational access. Landing and road infrastructure needed to log these units would itself constitute the habitat damage HFR-3 was written to prevent, making the commercial treatment both internally contradictory and inconsistent with the project's post-fire restoration objectives. No amount of PDC language can reconcile logging infrastructure with green tree retention in a landscape this depleted — the units themselves should not proceed.

H. Recommendations on “Temporary” Roads and Landings

- Significantly reduce new landings from 141 and reduce project footprint to reflect the Trinity County Collaborative White Paper. Prohibit any new landings (i) in NSO N/R/F habitat, (ii) on slopes >35%, (iii) in unstable terrain, (iv) on serpentine or schist soils with documented landslide features, (v) within 300 ft of a perennial stream, or (vi) in stands where any tree >24” DBH would need to be removed for landing construction.
- Eliminate the 10 newly constructed temporary road segments (3.1 miles). Use only existing closed temporary alignments and the 22 reopened segments (11.7 miles), and only where no heavy reconstruction or new landings are required.
- Decommission, not just “close,” all temporary roads after use. Decommissioning must include full subsoil tillage to a minimum 18-inch depth, removal of all stream crossings to grade, water-bar installation, slash placement on the running surface, and revegetation with native species — BEFORE the wet season following completion.
- Disclose, in a publicly available Appendix, the general location of every proposed temporary (existing and new) road segment and landing, with slope class, soil map unit, distance to nearest stream, and decommissioning schedule.
- Require third-party (non-contractor) decommissioning verification by qualified hydrologists/soil scientists prior to release of contract performance bonds.
- Drop commercial thinning units south of SR 36 that would require new landing construction or temporary road clearing in areas where surviving canopy is at or below 40%.

XII. Soil

The R5 Forest Service Handbook 2509.22 establishes Soil Quality Standards: ≤15% detrimental disturbance project-wide, ≥50% post-activity soil cover on slopes <35%, ≥70% on slopes >35%, and ≥80% in Riparian Reserves. The EA states that 141 new landings (up to 0.5 acre each) plus 70.5 acres of new disturbance plus 20.5 acres of reutilized landings would total approximately

6% of the commercial unit acreage — but this 6% is not aggregated with skid trail disturbance (up to 15% of unit area), temp road disturbance, or fuel-pile burn scars.⁷³

- Aggregate cumulative detrimental disturbance estimates for each commercial unit. Demonstrate that no unit exceeds 15% detrimental disturbance, including skid trails, landings, temp roads, and pile burn scars. Provide unit-by-unit projections, not project-wide averages.
- For units with existing detrimental disturbance from the August Complex (e.g., Unit 41), reduce activity-related disturbance accordingly.
- Require operations in dry season only and prohibit ground-based work above 5,000 ft until soils are demonstrably dry.

XIII. Machine Piling on Log Landings: Discrete and Persistent Impacts

See also Machine Piling Science Compendium directly related to the project.

Mechanical piling — the use of bulldozers, tracked excavators, and other heavy equipment to push logging slash into burn piles on log landings — is included in the proposed action as fuels treatment. Decades of peer-reviewed research show that machine piling is a discrete and destructive activity whose environmental costs extend well beyond the harvest itself. On the steep, erodible, schist- and Franciscan-derived terrain of South Fork Mountain — habitat for federally listed salmonids, the NSO, and old-growth-dependent wildlife — every impact reported in the literature is amplified.

A. Severe and Persistent Soil Compaction

Cambi et al. (2015), in a comprehensive review of heavy-traffic impacts on forest soils, identify log landings and main skid trails as the most heavily compacted features of any timber harvest.⁷⁴ A global meta-analysis (1983–2021) found that logging-associated compaction increases soil bulk density by an average of 8.9%, reduces total porosity by 10.1%, and reduces saturated hydraulic conductivity by 40.2%; the greatest disturbance occurred after more than twenty machine passes — exactly the conditions of repeated dozer cycling on a landing — and none of these physical impairments recovered within the 3–6 year monitoring windows analyzed.⁷⁵ The Forest

⁷³ R5 FSH 2509.22 (Soil Quality Standards); Draft EA at p. 12; Soils Specialist Report at pp. 14, 27.

⁷⁴ Cambi, M., Certini, G., Neri, F., & Marchi, E. (2015). The impact of heavy traffic on forest soils: a review. *Forest Ecology and Management* 338:124–138. <https://doi.org/10.1016/j.foreco.2014.11.022>

⁷⁵ Nazari, M., Eteghadipour, M., Zarebanadkouki, M., et al. (2021). Impacts of logging-associated compaction on forest soils: a meta-analysis. *Frontiers in Forests and Global Change* 4:780074. <https://doi.org/10.3389/ffgc.2021.780074>

Service’s North American Long-Term Soil Productivity Experiment documented measurable declines in tree growth on compacted plots a decade after harvest.⁷⁶

B. Log Landings Sustain the Most Extreme Soil Damage of Any Timber-Sale Feature

Bulldozer leveling combines compaction with near-complete removal of the topsoil organic horizon. In a long-term study, log-landing soils 27 years after abandonment still exhibited significantly elevated bulk density and penetration resistance compared with adjacent undisturbed soils, indicating that landing impacts persist for human generations.⁷⁷ Restoration of topsoil over compacted landings has not been shown to fully restore ectomycorrhizal fungal communities — the symbionts on which conifer regeneration depends.

C. Machine Piling Drags Mineral Soil Into the Slash Pile

Unlike hand piling or lop-and-scatter, mechanical piling scrapes the surface as the dozer blade or excavator bucket pushes material together. Pierobon et al. (2022) observed that “slash piles created by mechanical equipment are contaminated with more soil due to the act of pushing the residual material into piles,” a contamination that increases smoke production during the subsequent burn.⁷⁸ From a soil-productivity standpoint, the same process exports the most fertile, biologically active soil horizon into a pile that is then ignited.

D. Pile Burning Sterilizes and Chemically Alters the Underlying Soil

Mott, Hofstetter & Antoninka (2021) report that temperatures under burning piles can drive tissue-damaging heat to depths of up to one meter, that burn-pile coverage commonly occupies 2–8% of treatment-unit area, and that pile burning consistently degrades soil physical and chemical properties, suppresses tree regeneration in burn footprints, and harms understory vegetation, soil arthropods, and small mammals.⁷⁹ Korb et al. (2004) found pile burning “nearly eliminated populations of viable seeds and arbuscular mycorrhizal propagules and altered soil chemical properties” at pile centers.⁸⁰ Rhoades et al. (2015) confirmed that even small piles less

⁷⁶ Powers, R.F., Scott, D.A., Sanchez, F.G., et al. (2005). The North American long-term soil productivity experiment: findings from the first decade of research. *Forest Ecology and Management* 220(1–3):31–50.

<https://doi.org/10.1016/j.foreco.2005.08.003>

⁷⁷ DeArmond, D., Ferraz, J.B.S., Marra, D.M., et al. (2022). Impacts to soil properties still evident 27 years after abandonment in Amazonian log landings. *Forest Ecology and Management* 510:120105.

<https://doi.org/10.1016/j.foreco.2022.120105>

⁷⁸ Pierobon, F., Sifford, C., Velappan, H., & Ganguly, I. (2022). Air quality impact of slash pile burns: simulated geo-spatial impact assessment for Washington State. *Science of The Total Environment* 818:151699.

<https://doi.org/10.1016/j.scitotenv.2021.151699>

⁷⁹ Mott, C.M., Hofstetter, R.W., & Antoninka, A.J. (2021). Post-harvest slash burning in coniferous forests in North America: a review of ecological impacts. *Forest Ecology and Management* 493:119251.

<https://doi.org/10.1016/j.foreco.2021.119251>

⁸⁰ Korb, J.E., Johnson, N.C., & Covington, W.W. (2004). Slash pile burning effects on soil biotic and chemical properties and plant establishment. *Restoration Ecology* 12(1):52–62. <https://doi.org/10.1111/j.1061-2971.2004.00312.x>

than 5 m in diameter produced significant immediate effects on soil chemistry and on native plant cover.⁸¹

E. Burn-Pile Scars Become Persistent Footholds for Invasive Plants

Sterilized, nutrient-altered substrate combined with surrounding seed sources of cheatgrass, medusahead, yellow starthistle, and other invasives creates ideal conditions for non-native colonization. Fornwalt & Rhoades (2011)⁸² and Halpern, Antos & Beckman (2014)⁸³ documented elevated non-native cover on pile-burn scars years after burning. These weedy patches persist for decades and serve as seed reservoirs.

F. Carbon Loss, Sediment Delivery, and Downstream Water-Quality Effects

A recent global synthesis of 151 field studies found that forest disturbance can drive soil-organic-carbon losses of up to 60 Mg ha⁻¹ that persist at least four decades, with the largest losses in cold-climate forests with deep organic layers — a description that fits much of South Fork Mountain.⁸⁴ The California State Water Resources Control Board has identified sediment as the nonpoint-source pollutant of greatest concern from forestry activities.⁸⁵ Compacted, denuded landings act as concentrated sediment sources delivering fines into streams that support listed coho, steelhead, and Chinook.

G. Recommendations

- Where machine piling cannot be avoided, minimize landing footprints, do not repeatedly burn slash on the same landing, and require post-burn restoration including subsoiling, topsoil amendment, and native-species seeding — with monitored success criteria.
- Prioritize chipping or hand piling over machine piling on sensitive, steep, or already-degraded sites.
- Disclose the cumulative footprint of mechanical piling (acres scraped, locations relative to streams and listed-species habitat, smoke production estimates) in the EA.

⁸¹ Rhoades, C.C., Fornwalt, P.J., Paschke, M.W., Shanklin, A., & Jonas, J.L. (2015). Recovery of small pile burn scars in conifer forests of the Colorado Front Range. *Forest Ecology and Management* 347:180–187. <https://doi.org/10.1016/j.foreco.2015.02.036>

⁸² Fornwalt, P.J. & Rhoades, C.C. (2011). Rehabilitating slash pile burn scars in upper montane forests of the Colorado Front Range. *Natural Areas Journal* 31(2):177–182. <https://doi.org/10.3375/043.031.0208>

⁸³ Halpern, C.B., Antos, J.A., & Beckman, L.M. (2014). Vegetation recovery in slash-pile scars following conifer removal in a grassland-restoration experiment. *Restoration Ecology* 22(6):731–740. <https://doi.org/10.1111/rec.12137>

⁸⁴ Mayer, M., Baltensweiler, A., James, J., Rigling, A., & Hagedorn, F. (2024). A global synthesis and conceptualization of the magnitude and duration of soil carbon losses in response to forest disturbances. *Global Ecology and Biogeography* 33(1):141–150. <https://doi.org/10.1111/geb.13797>

⁸⁵ California State Water Resources Control Board. Nonpoint Source Pollution Control Program: Forestry. https://www.waterboards.ca.gov/water_issues/programs/nps/encyclopedia/2_forest.html

XIV. Why Effectively Clearcutting Mistletoe-Infected White Fir Stands Is the Wrong Response

The Project proposes 58 acres of “overstory sanitation” harvest targeting white and red fir with severe dwarf-mistletoe infection, with subsequent multi-entry treatments to remove infected understory and any subsequent infected overstory.⁸⁶ The cumulative effect — first-entry overstory removal, repeated understory removal, and removal of any infected overstory once regeneration is established — is functionally a multi-entry clearcut of true-fir stands across decades.

- Dwarf mistletoes are native parasites and important ecological structures. Mistletoe-infected trees produce “witches’ brooms” that are essential nesting structure for NSO, marbled murrelet, fisher, marten, flying squirrels, raptors, and many cavity-nesting birds. The USFWS NSO Recovery Plan explicitly identifies mistletoe as one of the “decadence components” defining high-quality NSO habitat — alongside large diameter trees, broken-topped live trees, cavities, large snags, and fallen trees.⁸⁷ Removing mistletoe-infected trees on a forest-health rationale degrades habitat that LSR, RR, and Critical Habitat are meant to protect.
- Native parasites at endemic levels should be retained. Dwarf mistletoes have co-evolved with western fir species; mortality and gradual decline of infected trees create snags and downed wood that drive ecological complexity. The agency’s own Douglas-fir mistletoe report concedes mortality is at “endemic levels” and notes that “the disease creates large snags and decadent trees that are imperative for wildlife species.”
- Removal-and-replacement does not work. Multiple studies show that dwarf mistletoe sanitation harvests rarely achieve durable control because wind-dispersed seeds re-infect from edge trees, residual hosts, and adjacent stands. The prescription’s assumption that the second cohort will be “mistletoe-free” is empirically unsupported and commits the agency to perpetual re-entry.
- Driver is moisture stress and fire exclusion, not mistletoe. True-fir mortality reflects drought-stressed sites and a fire-suppressed stand structure. Where *Cytospora* canker and fir engraver are also present, the underlying driver is moisture stress and overstocking; the appropriate response is targeted retention thinning and restoration of low-intensity fire — not whole-stand fir removal.
- Annosus and Sporax. The proposed borate (Sporax) application on 730 acres of cut fir stumps is a prophylactic, landscape-scale fungicide treatment that is not justified by

⁸⁶ Silviculture Specialist Report (Thatcher, November 18, 2025) at pp. 18–20; Forest Health Protection Report (Hawkins, December 5, 2025).

⁸⁷ USFWS, Revised Recovery Plan for the NSO (2011) (mistletoe “witches’ brooms” listed as decadence components defining high-quality NSO habitat).

Annosus presence “at low levels,” and adds chemical inputs to LSR and Critical Habitat — including within Riparian Reserves under vague PDCs.

Recommended modifications:

- Limit “sanitation” to retention of all DMR 0–4 trees and removal only of DMR 5–6 trees that have lost more than 50% live crown. Retain all mistletoe-broomed snags and trees with brooms in the upper crown.
- Eliminate the multi-entry commitment to re-remove understory and subsequent infected overstory.
- Confirm that Douglas-fir, sugar pine, ponderosa pine, and incense cedar (less- or non-host species) will be retained at all sizes.

XV. Cultural Resources and Tribal Consultation

South Fork Mountain is not just an ecologically significant landscape — it is a cultural landscape continuously inhabited, traveled, hunted, gathered, and burned for thousands of years. The black oak, tanoak, hazel, beargrass, manzanita, and incense cedar communities along the ridge are first-foods, basketry materials, and ceremonial plants whose presence reflects tens of millennia of stewardship through cultural burning.

National Historic Preservation Act § 106 (54 U.S.C. § 306108) requires federal agencies to consult with Tribes regarding projects that may affect traditional cultural properties (TCPs), sacred sites, and historic properties. EO 13007 directs federal land managers to avoid adversely affecting the physical integrity of Indian Sacred Sites. EO 13175 requires meaningful, government-to-government consultation. The Forest Service’s trust responsibility encompasses protection of culturally significant plants, gathering areas, sacred sites, salmon fisheries, and the forests and waters that sustain them.

- The EA lists tribal contacts but does not document substantive, government-to-government consultation that has shaped Project design.
- Conduct Native American Heritage Commission (NAHC) Sacred Lands File searches and document the search outcomes in the project record.
- Expand the Beargrass Management Zone — designed in collaboration with affected Tribes — to include hazel, cedar, oak, manzanita, mushroom, and other first-foods management areas.
- Center cultural burning. Engage Tribal cultural-fire practitioners formally and substantively in determining where and how mechanical treatment occurs versus where stands are deferred for cultural fire.

- Disclose the percentage of Project area subject to Class III archaeological survey and the State Historic Preservation Office (SHPO) consultation record. Treatment units that have not been Class III surveyed should not be approved.
- Treaty-protected fisheries. The Hoopa Valley Tribe and other Tribes hold treaty-protected fishing rights in the Trinity River system that depend on cold, clean water from intact upstream forests. Any Project effect on sediment or temperature in the South Fork Trinity is a potential treaty-rights concern.

XVI. Silviculture: Retain Large Mature Fire-Resistant Trees and Canopy Closure

The Project’s silvicultural prescription is thin-from-below to RBA 120–200 ft²/acre plus overstory sanitation. The prescription as written creates several problems.

We appreciate the EA’s consideration of retaining older, larger trees. However, the ecological gains of any retention standard are functionally meaningless when the same ridge is simultaneously subjected to 141 new landings (each up to half an acre of compacted bare ground), 14.8 miles of temporary road construction, and skid trails covering up to 15% of every commercial unit. No amount of careful thinning prescription can compensate for a ground-disturbance footprint of this magnitude. The retention targets and the landing/road network work at cross purposes: one attempts to grow structure while the other physically destroys it.

A. Large-Tree Retention Standards Are Aspirational, Not Enforceable

Here is what the EA provides for the retention of large trees:

- Outside Late-Successional Reserves (LSR), cutting trees larger than 34” DBH would be minimized; doing so is allowed only as an exception to meet maximum residual basal area or to remove dwarf-mistletoe-infected trees (p. 10). Modeling indicates 66% of trees cut would be ≤19” DBH and 96% ≤34” DBH.
- Inside LSR, unit-specific, age-based DBH limits apply (per design criterion SILV-1) to avoid cutting trees >150 years old. These apply in Timber units 14, 17, 34, 36, 38, 48 and align with the SHF LSR Assessment, pp. 194–196 (p. 80).

The “minimize outside LSR” standard has more give in it than the two named exceptions suggest, and the stand descriptions in the BA make that clear.

The thinning prescriptions target residual basal area (RBA) ranges, not specific trees. In “mid-mature” Douglas-fir units (26, 27, 34, 36, 38, 48) the BA describes trees as “generally 25”–40” DBH” with an RBA target of 160–200 ft²/acre. When the QMD of a stand is already in the mid-to-upper 20s and trees run into the 30s and 40s, basal area is heavily concentrated in the larger size classes. Removing enough trees to reach the RBA target — even thinning from below — would routinely pull trees above 34” because that’s where much of the stand’s basal area lives. The

RBA exception isn't a narrow carve-out; in dense mid-mature stands it's structurally likely to apply across significant acreage.

The NSO nesting/roosting units (19, 39, 46) compound this. Those stands have trees “generally 20”–40” with a few larger 60”+ predominants” and a pre-treatment SDI running at 60% of max. Meeting an RBA of 160–200 ft²/acre while protecting the 60”+ predominants means the cutting burden falls on the next tier down — codominant trees in the 30”–45” range — some of which will be above 34”.

The pure sanitation units are a separate problem entirely. Units 4 and 45 are essentially seed-tree harvests of stands with ~100% red fir infection. The prescription removes all trees with DMR >0 to leave ≥60 ft²/acre. There's no stated DBH cap on infected tree removal in those units — the mistletoe exception swallows any 34” limit whole.

B. How Many Large Trees Would Be Cut?

“Minimize” and “generally” is not “prohibit.” The FVS modeling projects 4% of cut trees will be ≥34” DBH. Across 1,183 acres of commercial thinning that's not a trivial number of large trees, and it's a projection from a model — actual marking decisions in the field, driven by Retention Basal Area targets, will determine the real outcome stand by stand.

The EA's own modeling projects that 4% of trees removed during commercial logging would be 34 inches or larger in diameter. Across the 1,183 acres of commercial thinning, that translates to an estimated 3,000–3,500 large trees removed, with a plausible range of 2,500–4,500 depending on actual stand conditions.

Landings and temporary roads significantly add to that total. Up to 75 acres of complete vegetation clearing is proposed with no DBH limit applied to clearing decisions. At typical stand densities, this likely adds 400–600 more trees above 34” DBH, bringing the project-wide estimate to somewhere between 3,000 and 5,000 late-successional fire-resistant wildlife trees.

These numbers cannot be confirmed from the public record because the EA does not disclose total projected trees cut or the size-class breakdown for landing and road clearing. At an average diameter of around 38 inches, each of these trees represents roughly 7.9 square feet of basal area — the structural legacy of a century or more of growth — and a disproportionate share of the wildlife habitat value the project's design criteria nominally protect.

Because PDC SILV-1 itself establishes that the 34”+ size class in these stands corresponds to trees approaching or exceeding 150 years old, the EA is essentially saying minimize cutting trees that old, then proceeding to cut an estimated 3,000–5,000 of them.

C. The Silviculture Report Does Not Adequately Address Post-Thinning Wind, Snow Loading, and Rain-on-Snow Risks

The Silviculture Report does not adequately address post-thinning wind and snow loading risks specific to the South Fork Mountain ridgeline, despite acknowledging seasonal snowpack and elevated wind exposure as site characteristics. Rain-on-snow events are entirely absent from the

analysis, a notable gap given the project’s stated watershed resilience objectives and the snowpack-dependent nature of the site. While landing disturbance acreage is disclosed, landings are not analyzed as discrete canopy openings, and their contribution to cumulative gap creation and wind exposure goes unaddressed.

1. Rain-on-Snow and Atmospheric River Events

The South Fork Trinity River watershed, which drains the project area, has a documented history of catastrophic rain-on-snow flooding. The 1964 Christmas flood — a classic atmospheric river (“Pineapple Express”) event — peaked at approximately 41,200 cfs at the Forest Glen gauge near the project area and 95,400 cfs downstream at Salyer.⁸⁸ Heavy rains washed enormous amounts of silt and debris into the river, and decades after the flood, erosion rates in the watershed remain much higher than the pre-1964 average.⁸⁹ This history is directly relevant to a project that proposes new landings, temporary roads, and ground disturbance on a snowpack-dependent ridge. Forest cover — particularly closed canopy on snow-accumulation slopes — is the principal site-scale variable mediating rain-on-snow runoff response: removing canopy increases snowpack accumulation in openings, increases the snowpack’s exposure to warm-rain melting, and increases peak flow.⁹⁰

2. Current Climate Trends in Trinity County

Rain-on-snow dynamics are not just historical — they are intensifying. In the 2026 winter season, one cold storm that delivered significant snowfall was followed by a warmer system that raised snow levels above 6,000 feet and melted much of the lower-elevation snow, with rain at high elevations diminishing the height of the snowpack and increasing the snow water equivalent.⁹¹ Given the project area tops out at approximately 5,600 ft, this places it squarely in the elevation band where rain-on-snow events are now occurring routinely. Trinity County recently saw record warm minimum temperatures and one of the warmest October-through-April periods on record.⁹² This is the trajectory regional climate models predict will intensify, making snowpack-dependent ridges like South Fork Mountain progressively more susceptible to rain-on-snow flood generation each year the project’s footprint persists.

⁸⁸ U.S. Geological Survey, Surface Water Records for South Fork Trinity River at Forest Glen (Station 11528700) and Trinity River at Salyer; peak streamflow records for the December 1964 flood (Forest Glen ~41,200 cfs; Salyer ~95,400 cfs). <https://waterdata.usgs.gov/>; California Department of Water Resources / National Weather Service, Christmas Flood of 1964 historical records.

⁸⁹ Trinity County Resource Conservation District (1998). Road inventory and erosion summary, upper South Fork Trinity River basin (including upper South Fork and Plummer Creek subwatersheds); USDA Forest Service (1999). Upper South Fork Trinity River – Happy Camp Creek Watershed Analysis (post-1964 elevated erosion findings).

⁹⁰ Harr, R.D. (1986). Effects of clearcutting on rain-on-snow runoff in western Oregon: a new look at old studies. *Water Resources Research* 22(7):1095–1100. <https://doi.org/10.1029/WR022i007p01095>

⁹¹ *Trinity Journal* (2026). Winter season storm coverage and climate-trend reporting, Trinity County, CA (record warm minimum temperatures and warmest October–April period reporting).

⁹² *Trinity Journal* (2026). Winter season storm coverage and climate-trend reporting, Trinity County, CA (record warm minimum temperatures and warmest October–April period reporting).

3. Wind Exposure on the Ridge

The South Fork Mountain ridgeline runs north-south and is regionally recognized as exposed to prevailing northwesterly winds. While site-specific blow-down studies for this exact ridge are not readily available, the orographic lift produced by ridges oriented perpendicular to incoming Pacific storms — the same mechanism that drove the 1964 flood — also produces sustained high winds along ridgetops, a factor the Silviculture Report’s brief blow-down discussion does not quantify. Peer-reviewed silvicultural literature documents that thin-from-below treatments increase windthrow vulnerability for at least 5–10 years post-treatment as residual stems lose mutual support from removed neighbors and as canopy gaps allow wind penetration deeper into stands.⁹³

4. Landings as Discrete Canopy Openings

The 141 proposed new landings — at up to 0.5 acre each — function ecologically and hydrologically as discrete canopy openings, not as a diffuse percentage of unit area. Each is a 0.5-acre clearing fully open to wind and to direct rainfall on residual snow. The Silviculture Report treats landing acreage as a soils metric only; it does not analyze landings as canopy gaps that aggregate with skid trail gaps, road corridor gaps, and prescribed thinning gaps to alter the wind, snow, and rain-on-snow regime at the stand and unit scale. This is a significant analytical omission for a snowpack-dependent ridge with a documented rain-on-snow flood history feeding two Wild and Scenic Rivers and federally listed salmonids.

D. Recommendations

- Large fire-resistant trees are the single most important structural feature in fire ecology. Retain ALL trees ≥ 24 " DBH outside of unique safety circumstances (and ≥ 20 " DBH for Douglas-fir within LSR). The EA’s only commitment that cutting trees > 34 " DBH “will be minimized” is unenforceable.
- Closed-canopy mature stands are the most fire-resistant landscape elements. Lesmeister et al. (2019) found that mature/old-growth stands maintained their structure and remained dominated by old trees following mixed-severity wildfire, while younger thinned stands often did not.⁹⁴ Halofsky et al. (2020) document that warmer, drier conditions under climate change make the maintenance of cooler, moister microclimates under closed canopies even more important.
- Variable-density thinning with explicit retention of skips (no-treatment areas) and gaps creates structural heterogeneity. Specify a project-wide minimum 15–20% skip area inside each commercial unit, not the 5% currently committed only in NSO N/R units.

⁹³ Spies, T.A., Stine, P.A., Gravenmier, R., Long, J.W., & Reilly, M.J. (2018). Synthesis of science to inform land management within the Northwest Forest Plan area. USDA Forest Service Gen. Tech. Rep. PNW-GTR-966 (windthrow vulnerability following thinning treatments); see also Franklin et al. (2002), *supra*.

⁹⁴ Lesmeister, D.B., et al. (2019), *supra*; Halofsky, J.E., Peterson, D.L., & Harvey, B.J. (2020). Changing wildfire, changing forests. *Fire Ecology* 16:4. <https://doi.org/10.1186/s42408-019-0062-8>

- Add canyon live oak and tanoak as priority hardwoods for release in addition to black oak and madrone.
- Quantitatively analyze post-thinning wind, snow loading, rain-on-snow, and aggregated canopy-gap effects on a unit-by-unit basis. Treat the 141 proposed new landings as discrete canopy openings, not as a soils metric, and integrate them with skid-trail and road-corridor openings to disclose cumulative gap creation, peak-flow response in rain-on-snow events, and post-treatment windthrow risk on this snowpack-dependent ridge.

XVII. Fire and Fuels: Effectiveness, Maintenance, and the Limits of Vegetation Treatment

See also Fuel Break Effectiveness, Canopy Retention & Fire Behavior Science and the South Fork Mountain Fire and Fuels Modeling Critique directly related to the project.

The EA's logic falls apart on timeline *and* crown fire mechanics. The agency's own admissions undermine its conclusions. It concedes that treatments "could result in increased surface fuels" and acknowledges that "opening these stands would increase potential wind speeds, which contribute to higher flame lengths." Yet it argues these effects will be negated by future shade and canopy closure—a process that takes decades or longer in heavily thinned areas (40% canopy removal or less).

This timeline creates a fundamental contradiction. Until canopy recovery occurs, the project increases both surface fuels and wind-driven flame lengths. Crown fires, however, are driven by ladder fuels—which logging creates—or extreme wind events; neither can be stopped by surface fuel reduction alone. The EA offers no credible mechanism by which near-term fuel increases and wind exposure translate to reduced fire risk.

The project is framed as an emergency to reduce fire risk and promote resilience. Yet the Fire and Fuels Report reveals it increases fire risk in the near term, while the long-term canopy removal directly contradicts the stated Purpose and Need.

The science also demands honesty about what fuels treatments can — and cannot — do.

- Canopy reduction can increase fire behavior. Removing overstory shade lowers fuel moisture, raises understory temperatures, increases wind speeds, and can accelerate growth of resprouting brush. Banerjee (2020), using physics-based fire models, confirms that "in dry conditions, too much thinning can introduce more windy and turbulent conditions, which can increase fire intensity."⁹⁵ A 2018 letter signed by 200+ scientists concluded that under extreme fire weather, thinning has limited effect on fire behavior.

⁹⁵ Banerjee, T. (2020). Impacts of forest thinning on wildland fire behavior. *Forests* 11(9):918. <https://doi.org/10.3390/f11090918>

- DellaSala et al. (2022) systematic review and meta-analysis of 15 empirical studies on Spotted Owls and wildfire found that mixed-severity fire “does not appear to be a serious threat to owl populations and likely imparts more benefits than costs for Spotted Owls,” and that “fuel-reduction treatments intended to mitigate fire severity in Spotted Owl habitat are unnecessary.”⁹⁶
- Maintenance is the missing piece. Roadside fuelbreaks, prescribed burns, and thinning treatments must be re-treated every 5–15 years. The EA describes a multi-entry 20-year strategy, but the agency does not commit to maintenance funding, and the historic record on maintenance funding is poor.

In summary, the Fire and Fuels Report and Modeling provide no support for canopy removal and commercial logging as necessary to meet the Purpose and Need. The Fuels Report's own fire behavior modeling shows that under No Action, the Northern Area of Interest breaks down like this:

- 46% (~1,400 acres) — surface fire
- 41% (~1,200 acres) — passive crown fire (torching: individual trees or small groups igniting, but fire not spreading tree-to-tree through the canopy)
- 1% (~30 acres) — active crown fire (fire running continuously through the canopy from tree to tree)
- 12% — non-burnable (roads, rock, etc.)

The big problem is torching — 41% of the area. You fix torching by raising Canopy Bulk Height (CBH) and treating surface fuels.

The small problem is active crown fire — 1% of the area. You fix active crown fire by reducing Canopy Bulk Density (CBD).

The prescription commits ~1,100 acres of commercial thinning primarily to reducing CBD — treating the 1% problem at landscape scale — while CBH lift through pruning and surface fuel treatment, which would address the 41% problem, is secondary, less funded, and in the case of prescribed fire, explicitly "location/timing pending."

The project is doing the most work on the smallest problem, and the least work on the biggest one.

XVIII. Invasive Plants

Invasive non-native plants are among the most significant and lasting threats to native forest biodiversity on the South Fork Mountain ridge. The agency's own Invasive Plant Risk Assessment

⁹⁶ DellaSala, D.A., et al. (2022). Spotted Owls and Forest Fire: a Systematic Review and Meta-Analysis of the Evidence. *Frontiers in Ecology and Evolution* 10:928426. <https://doi.org/10.3389/fevo.2022.928426>

reaches an unambiguous conclusion: the overall risk of introduction and spread of invasive plants associated with this project is HIGH across all five evaluated factors. This finding triggers a clear legal obligation under FSM 2903.12 and Executive Order 13112: the decision document must identify specific, enforceable control measures adequate to reduce that risk, and the agency must publicly document that project benefits outweigh potential harm and that all feasible and prudent preventive measures will be taken.

We are concerned the current PDCs (NIBS-1 through NIBS-9), while better than nothing, do not adequately match the scale of documented risk. Our specific concerns follow.

The Risk Assessment Documents a Serious Pre-Existing Threat. The Invasive Plant Risk Assessment identifies 112 invasive plant sites within the project boundary, including five cheatgrass (*Bromus tectorum*), 59 diffuse knapweed (*Centaurea diffusa*), four spotted knapweed (*Centaurea maculosa*), 13 yellow starthistle (*Centaurea solstitialis*), five Canada thistle (*Cirsium arvense*), and three Scotch broom (*Cytisus scoparius*) sites. All but cheatgrass are CCR 4500 listed noxious weeds. Cheatgrass is a California Department of Food and Agriculture (CDFA) Rank C noxious weed; the others are on California Code of Regulations (CCR) Title 3, § 4500 list.⁹⁷ The IPRA concludes the project is HIGH risk for invasive introduction and spread.

State Highway 36, FS Routes 23 and 1, and all project roads are rated HIGH risk as non-project-dependent spread vectors. Livestock from two unfenced allotments (Eightmile and Van Horn) traverse the entire project area and actively disperse propagules. This is not a speculative risk — it is a documented, active, multi-species infestation in a landscape that is proposed to receive a large influx of off-forest equipment, new temporary roads, and extensive soil disturbance.

Cheatgrass is highly flammable and converts shrublands to fire-adapted invasive grasslands, fundamentally altering fire return intervals. There are five known locations in the project area. **A failed invasive control commitment will undermine the very fire-resilience purpose of the project.**

New Landings and Roads Are the Highest-Risk Activities. The Risk Assessment rates landing construction and new temporary road construction as HIGH risk (resulting in <40% canopy cover and full ground exposure), yet the project proposes up to 141 new landing sites (up to 91 acres of total landing disturbance) and approximately one mile of new temporary roads. Roads are the primary vector for invasive plant spread in forested landscapes, increasing invasive density by 300–400% compared to adjacent unlogged forest.⁹⁸ Every piece of off-forest equipment arriving via Highway 36 and existing FS roads — themselves documented invasion corridors — carries propagules directly into the project footprint.

The August Complex Burn Area Is Uniquely Vulnerable. The southern portion of the project area, within the 2020 August Complex footprint, has already been converted to open-canopy brush

⁹⁷ Invasive Plant Risk Assessment (Carlberg, February 23, 2026); CDFA Encycloweedia (https://www.cdfa.ca.gov/plant/ipc/encycloweedia/encycloweedia_hp.html).

⁹⁸ Christen, D. & Matlack, G. (2006). The role of roadsides in plant invasions: a demographic approach. *Conservation Biology* 20(2):385–391. <https://doi.org/10.1111/j.1523-1739.2006.00315.x>

fields with minimal native overstory competition. Disturbed, open soils with reduced native plant cover represent peak invasive establishment conditions. Mechanical treatments, mastication, and landing development in this area will amplify an already elevated establishment risk precisely when it is most critical to suppress it.

PDC Gaps That Must Be Addressed. The current NIBS PDCs rely primarily on equipment cleaning, avoidance of flagged sites, and sequential work order (low-infestation to high-infestation areas). These are reasonable baseline measures, but they are insufficient given the documented risk level for the following reasons:

- No pre-treatment survey requirement for new landing and road locations. NIBS-8 prohibits new landings and temp roads at known invasive sites, but 14 identified infestation sites are already deemed unfeasible to treat and are designated equipment exclusion zones. Surveys of proposed new landing and road locations must be completed and documented before ground disturbance, not assumed adequate based on existing site records alone.
- No binding post-treatment monitoring or adaptive management trigger. The PDCs specify treatment of 75 sites for “at least 3 consecutive years,” but there is no monitoring protocol, no reporting requirement, and no adaptive management clause that would require escalated response if new infestations establish in disturbed areas during or after project implementation. Three years of treatment without monitoring is not an adaptive management program.
- Mastication prohibition is conditional, not absolute. NIBS-6 prohibits mastication in fuel treatment areas with invasive plants unless plants are treated prior to entry or equipment is washed before leaving the site. Mastication equipment is one of the highest-risk vectors because it shreds and disperses plant material across a large area — a single pass through a knapweed patch can spread seed across hundreds of feet. The “treated prior to entry” exception for sites where treatment “cannot be done prior to activities” is insufficiently protective for highly mobile, wind- and animal-dispersed species.
- No requirement for certified weed-free seed in restoration or revegetation. The PDCs do not specify that any seed, straw, mulch, or other organic material imported for post-treatment site stabilization and revegetation must be certified weed-free. This is a standard and essential requirement that must be made explicit.
- No protocol for early detection of new infestations. Given that 89 sites are already active and that project disturbance will create ideal colonization conditions, the EA should include a rapid-response early detection protocol specifying who surveys, on what schedule, what triggers a response, and what resources are committed to control newly detected populations during the critical establishment window.

Forest Service Manual 2900 — Invasive Species Management — establishes mandatory direction for line officers. FSM 2903 directs that “actions must be initiated, coordinated, and sustained to

(1) prevent, control, and eliminate priority infestations of invasive species in aquatic and terrestrial areas of the NFS by using an integrated pest management approach.” FSM 2080.44.6 requires line officers to determine the risk of Non-Native Invasive Species (NNIS) introduction or spread as part of the NEPA process for proposed actions and to incorporate prevention measures.⁹⁹ The Six Rivers LRMP further requires “practices that prevent the introduction or spread of invasive plant species for sites where ground-disturbing activities are planned.”

Given a HIGH-risk determination, FSM 2900 direction, and Forest Plan requirements, equipment-washing PDCs alone are insufficient. The Project’s invasive risk is structural — driven by 14.8 miles of new/reopened road, 141 new landings, and skid trails on up to 15% of every commercial unit — and must be addressed at that scale.

Recommendations:

- Treat all 112 known invasive sites prior to mechanical entry. Provide pre- and post-project monitoring for at least 5 years.
- Confirm that 100% of new landings or new temporary roads avoid known invasive sites.
- Require pre-treatment invasive plant surveys of all proposed new landing and temporary road locations by a qualified botanist before any ground disturbance is authorized, with results documented and incorporated into unit-level design criteria.
- Add a mandatory post-treatment invasive plant monitoring protocol for at minimum five years post-implementation, with annual surveys of all disturbed areas (landings, temp roads, skid trails, burn piles, and adjacent road corridors), reporting to the responsible official, and a defined adaptive management trigger requiring escalated treatment if new infestations exceed a specified threshold.
- Require all imported seed, straw, mulch, wood chips, and other organic material used for site stabilization and revegetation to be certified weed-free, and add this as an explicit, enforceable contract requirement.
- Strengthen NIBS-6 to prohibit mastication in any unit where invasive plants are known or suspected to occur unless all invasive plants within and immediately adjacent to the unit have been treated and confirmed absent by a qualified botanist.
- Designate the 14 infested sites deemed “unfeasible to treat” as permanent equipment exclusion zones with physical flagging maintained throughout project implementation, and ensure contractor contracts include financial penalties for entry into flagged zones.

⁹⁹ FSM 2900, Invasive Species Management (effective Dec. 5, 2011); FSM 2903 (objectives include preventing, controlling, and eliminating priority infestations using IPM); FSM 2080.44.6 (line officers must determine NNIS introduction/spread risk in NEPA process).

https://www.fs.usda.gov/im/directives/fsm/2900/wo_2900_zero_code_clear.doc

- Commit to funded, multi-year treatment of all 75 actively managed invasive sites with a performance bond or equivalent mechanism ensuring treatment occurs regardless of budget fluctuations, and incorporate this commitment into the decision document.
- Require all vehicles and equipment entering the project from off-forest to be documented as cleaned and inspected at a designated wash station before accessing the project area, with inspection records retained in the project file.
- Document the line officer’s NNIS risk determination per FSM 2080.44.6 and include the determination in the Decision Notice.

XIX. Visual Quality

Many of the proposed commercial logging units are located within Retention and Partial Retention Visual Quality Objectives, where activities must remain visually subordinate to the natural landscape. With the Forest Service proposing up to 141 new log landings, it is difficult to see how operations of that scale and intensity could realistically meet the strict visual standards these designations require.

- Visual Quality Objectives: Treatments in Retention (1,190 acres) and Partial Retention (3,597 acres) VQO areas must be described in terms of changes in line, form, color, and texture as visible from State Route 36, county roads, and trails. Disclose general locations for newly constructed landings and “temporary” roads. Provide before-and-after photo simulations for at least three representative viewpoints.

XX. Recommendations

The following modifications would substantially improve the SFM Project and bring it into compliance with the NWFP, LRMPs, ESA, NFMA, CWA, WSRA, Roadless Rule, NHPA, and NEPA:

- Withdraw the Emergency Situation Determination invocation. The Project has been planned since March 2024 and is not an emergency.
- Withdraw the project-specific Forest Plan amendment to allow ground-based logging on slopes up to 50%. Drop the 166 affected acres or treat them manually.
- Redesign the project to reflect the shaded fuel break design in the Trinity County Collaborative White Paper.
- Adopt a 24” DBH retention diameter for all conifers (and 20” for Douglas-fir within LSR-330). Make this a binding standard, not aspirational language.
- Maintain canopy cover $\geq 70\%$ in NSO suitable N/R habitat and $\geq 50\%$ canopy in NSO foraging.

- Eliminate commercial thinning of the 79 acres of NSO N/R-classified stands (Units 19, 39, 46).
- Eliminate any commercial logging in Inventoried Roadless Areas (Pilot Creek and Chinquapin). Limit any treatment in IRAs to hand cut-and-leave of trees ≤ 12 " DBH.
- Increase Riparian Reserve no-treatment buffers consistent with the science-based table in Section X.A: 165–330 ft for perennial fish-bearing streams; 165–250 ft for perennial non-fish-bearing; 100–165 ft for intermittent; 100 ft for ephemeral; expanded buffers (1.5x) on serpentine/schist soils; site-specific geotechnical analysis on slopes $>40\%$ and on inner-gorge / debris-flow runout zones.
- Reduce new landings from 141 to no more than 50 or less by reducing the overall footprint. Eliminate the 10 newly constructed temporary road segments (3.1 miles); prohibit any new landings on slopes $>35\%$, in unstable terrain, on serpentine or schist soils with documented landslide features, in NSO N/R/F habitat, or within 300 ft of a perennial stream. Prioritize lop-and-scatter and hand piling over machine piling.
- Decommission, not just "close," any temporary roads. Require third-party decommissioning verification by qualified hydrologists/soil scientists prior to release of contract performance bonds.
- Modify the overstory sanitation prescription to retain DMR 0–4 trees, all mistletoe-broomed snags, and all decadent structure. Eliminate the multi-entry commitment to remove regenerating cohorts.
- Quantitatively analyze post-thinning wind, snow loading, rain-on-snow, and aggregated canopy-gap effects on a unit-by-unit basis. Treat the 141 proposed new landings as discrete canopy openings (not merely a soils metric) and integrate them with skid-trail and road-corridor openings to disclose cumulative gap creation, peak-flow response in rain-on-snow events on this snowpack-dependent ridge, and post-treatment windthrow risk along the wind-exposed ridgeline. Reconcile this analysis with the documented 1964 atmospheric-river flood history of the South Fork Trinity watershed and with current Trinity County climate trends showing rain-on-snow events occurring at the project's elevation band.
- Complete pre-disturbance protocol surveys for NSO (full 2-year protocol per USFWS 2012, before — not concurrent with — operations), goshawk, marten, fisher, S&M mollusks (during their active season), and sensitive plants and fungi (at phenologically appropriate times) covering 100% of suitable habitat in all treatment units.
- Voluntarily conference under ESA § 7(a)(4) on the proposed-threatened northwestern pond turtle.

- Conduct project-specific ESA § 7 consultation with NMFS rather than tiering exclusively to the 2019 SRNF Programmatic. Disclose the resulting Biological Opinion or Letter of Concurrence.
- Provide a project-specific BA addressing cumulative take of NSO across the California Recovery Units, considering all projects in the April 2026 Quarterly NEPA Update and timber sales authorized in the past 24 months.
- Provide a quantitative WSRA § 7(a) ORV consistency analysis for the South Fork Trinity River corridor, and a foreground viewshed analysis for the Mad River.
- Provide a quantitative MIS analysis at the project scale for each MIS and Management Indicator Assemblage.
- Update and correct the Cumulative Watershed Effects (ERA) analysis to (a) reconcile the 7-mile vs. 14.8-mile temporary road discrepancy and rerun ERA calculations; (b) calculate and incorporate the ERA contribution of all 141 new landings and 41 reused landings by sub-watershed; (c) add the Rattail Project to the foreseeable-future projects baseline for Barry Creek, Bear Creek, Ruth Lake, and Lost Creek; (d) conduct field-based watershed condition assessments in Barry Creek and Lost Creek; (e) complete a stream crossing inventory consistent with Key Watershed 100-year storm standards; (f) prepare a site-specific legacy sediment inventory as required under Order No. R1-2024-0012.
- Perform the STNF LRMP five-factor CWE analysis, including identification of all beneficial uses, channel sensitivity ratings, and a comprehensive past-disturbance history.
- Demonstrate Key Watershed compliance. The project lies entirely within the South Fork Trinity River Tier 1 Key Watershed. Demonstrate that the project supports Key Watershed goals, no net increase in road density, and 100-year storm capacity for all stream crossings.¹⁰⁰
- Demonstrate consistency with the South Fork Trinity River Sediment TMDL using a recognized erosion model for each affected HUC-12 sub-watershed.¹⁰¹
- Pre-treat 112 known invasive plant sites prior to mechanical entry; commit to 5 years of post-project invasive monitoring and follow-up treatment. Prioritize cheatgrass removal and control. Document the line officer's FSM 2080.44.6 NNIS risk determination.
- Engage in meaningful, government-to-government consultation with the Nongatl, Wiyot, Lassik, and Wailaki peoples and the Round Valley Indian Tribes, Grindstone Indian

¹⁰⁰ USDA & USDI (1994). Northwest Forest Plan ROD, Aquatic Conservation Strategy, Key Watershed direction, pp. B-19, C-32.

¹⁰¹ U.S. Environmental Protection Agency (1998). South Fork Trinity River Sediment TMDL, EPA-approved 1998, calling for 50% sediment reduction. <https://www.epa.gov/tmdl>.

Rancheria, Tsungwe, Lassic Band, Bear River Band, Wiyot Tribe, Blue Lake Rancheria, Nor Rel Muk Wintu, Wintu of Hayfork, and Scotts Valley Band of Pomo Indians of California, prior to issuing a Decision Notice.

- Prepare an Environmental Impact Statement (EIS) given the scale, controversy, plan amendment, ESD invocation, NSO Critical Habitat impacts, and unique characteristics of the area; or, in the alternative, substantially supplement the EA to address the issues raised or redesign the project.
- Conduct a formal landscape-scale connectivity analysis for South Fork Mountain prior to any decision.

XXI. Conclusion

South Fork Mountain is one of California's most ecologically significant ridgelines. The Project's effects extend across virtually every resource category: old-forest wildlife habitat, anadromous fisheries, geologically unstable and landslide-prone soils, cold-water riparian systems already listed under the Clean Water Act, rare botanical communities, and an irreplaceable landscape-scale wildlife corridor under accelerating climate change. The scale of proposed ground disturbance is disproportionate to what this landscape can absorb and inconsistent with the legal standards that govern it.

We recognize the need for action on this ridge. However, its fire risk reduction value is matched — and arguably exceeded — by its ecological importance. Given the complex, interconnected systems at stake, fire resilience is achievable through a more targeted approach that prioritizes shaded fuel breaks, hand treatments, and prescribed fire over canopy removal at this scale. The tools exist to advance fire resilience without imposing significant ecosystem costs.

We appreciate your consideration of these comments, welcome further discussion and request notification of future project developments.

Respectfully,

A handwritten signature in black ink, appearing to read "Kimberly Bahn". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

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