August 7, 2017

Attn: Objections
Randy Moore
Regional Forester
USDA Forest Service
1323 Club Drive
Vallejo, CA 94592

RE: Horse Creek Community Protection and Forest Restoration Project Objection as per 36 CFR 218.8

- **Project Name: Horse Creek Community Protection and Forest Restoration Project**
- **Responsible Official: Forest Supervisor Patricia Grantham**
- **Klamath National Forest Supervisors Office**

Thank you for accepting this Objection pursuant to 36 CFR § 218 from the Environmental Protection Information Center (EPIC), Klamath Siskiyou Wildlands Center (KS Wild), and the Klamath Forest Alliance (KFA) regarding elements of the Horse Creek Community Protection and Forest Restoration Project Draft Record of Decision. For the purpose of this Objection, EPIC is the "lead objector."

Scope of this Objection

As per 36 CFR § 218 this Objection applies to the draft decision to conduct post-fire logging and road construction that will significantly negatively impact post-fire ecological, botanical, hydrological, wildlife, fisheries, soil and recreational forest values.

Objection Point #1: Failure to Obtain Regional Ecosystem Office Consistency Determination

The Klamath National Forest has violated the Northwest Forest Plan (NWFP) by failing to secure a consistency determination by the Regional Ecosystem Office (REO). The Klamath National Forest claims that it is exempt from the requirement, but a detailed reading of the applicable rules refutes this claim.

The NWFP requires that the Klamath National Forest submit plans for post-fire salvage logging to the Regional Ecosystem Office (REO) for review for consistency with the NWFP. NWFP Standards and Guidelines at C-13 ("Salvage of dead

trees…is subject to review by the Regional Ecosystem Office."). REO can make exceptions to this review requirement. *Id*. REO has exempted project-level review for "potential silviculture and risk treatments, including salvage" where such action is consistent with the "Management Recommendations" found in the Klamath National Forest's Forest-Wide Late Successional Reserve Assessment ("LSR Assessment"). Memorandum from Donald R. Knowles, Executive Director, Regional Ecosystem Office, to Brad Powell, Acting Regional Forester, Region 5 (Jan. 7, 1999) (hereafter "1999 Memo").

The Klamath National Forest argues that the project is consistent with guidance concerning "hazard reduction salvage." Letter from Patricia A. Grantham, Klamath National Forest Supervisor, to Douglas Young, Late-Successional Work Group Lead, Regional Ecosystem Office (June 7, 2017) (hereafter "2017 REO Letter"). The 2017 REO Letter relied up standards and guidance in the LSR Assessment for "Hazard Reduction - Blowdown, Insect, and/or Wildfire Related" and for "Salvage," suggesting that the Klamath National Forest believes that the project fits both categories. *See* 2017 REO Letter (highlighting that the project meets guidance at pages 4-22, indicating compliance with "Treatment Standards" for "Salvage," and at pages 4-15 and 4-16, indicating compliance with "Treatment Standards" for "Hazard Reduction."). In truth, the project as described does not meet either.

First, turning to the "Treatment Standards" for "Hazard Reduction - Blowdown, Insect, and/or Wildfire Related," the LSR Assessment requires that "[s]nag and [coarse woody debris] objectives will be met with the *longest and largest* logs and the *largest diameter* snags available on the site." LSR Assessment at 4-16 (emphasis added). If effect, the rules dictate that the largest snags be retained, regardless of other characteristics, probably because these snags provide the greatest habitat value and are the most likely to remain standing while a forest regenerates around it.

To show consistency with the LSR Assessment, the Klamath National Forest claims that "[l]arge, old snags, down logs or live trees that predate the current stand will be retained as safety allows." This claim does no correspond to the Final EIS and the Draft Record of Decision. The project description contains the individual tree retention standards: "Individual snags within harvest units will not be retained *unless* they have high quality habitat characteristics such as signs of decay and defect, cavities, broken or multiple tops, very large lateral branches and flattened canopy." Draft ROD at 13 (emphasis added). There is no age class requirement elsewhere within the project description, best management practices, or project design features.

Furthermore, the Draft Record of Decision makes clear that the Klamath National Forest intends to meet snag and coarse woody debris standards through snag retention in specific snag retention patches, not dispersed across logging units or wherever large, old snags that predate the current stand persist.

By contrast, the Westside Project—which underwent REO consistency review—contained snag retention standards that called for the retention of the largest size class of trees, as these trees predictably came front a previous age stand:

> Retain legacy component trees and snags in treatment units. These legacy components will be identified using physical characteristics. Legacy trees or snag size will vary depending on site condition, but are usually disproportionately large diameter trees that are often remnants of the previous stand on a given site. They are old standing trees that have persisted on the landscape after man-made and natural disturbances.

Westside Project FEIS at 118, Project Design Feature Wildlife-11. Furthermore, the "Stand Attributes" for "Hazard Reduction" do not fit the stand attributes for the project. The LSR Assessment states that such management is appropriate for stands where "[t]he area impacted is less than 10 acres in size and may have crown closure greater than 40%." Here, no logging unit is less than 10 acres in size, and some, such as Unit 118.58, are over ten times larger. Draft ROD at 13-15.

Next, turning to "Salvage," it is likewise clear that the Klamath National Forest's activities are not consistent with the LSR Assessment. The Treatment Standards require, "Following stand-replacing disturbance, management should focus on *retaining* snags that are likely to persist until late-successional conditions have developed and the new stand is again producing large snags." LSR Assessment at 4-22 (emphasis added). The project design and snag retention standards instead targets for removal those snags which are likely to persist on the landscape: the largest diameter class. The project sets a downward dbh cutoff, 14" dbh, but does not require the retention of larger snags outside of "snag retention" areas or that do not show "high quality habitat characteristics." Final EIS at 30-31.

The Treatment Standards likewise require the retention of "*[a]ll* standing live trees." LSR Assessment at 4-22. The proposed logging will not only take dead trees, but many live trees. Final EIS at 30. The number of live trees to be taken varies within LSR units, but EPIC documented presence of live trees not marked for retention in two LSR units.

The proposed salvage further violates stated "Objectives." The LSR Assessment states, "Salvage should have a longterm positive effect on late-successional habitat and should not diminish habitat suitability now or in the future."

As is clear from a previous Biological Opinion prepared for the nearby Westside Project, salvage in LSR is likely to diminish northern spotted habitat suitability in the long-term.

> As proposed, treatments will remove habitat structures and will create large openings in the canopy that will persist and will not function as habitat for decades. Habitat attributes associated with these forests typically do not develop until 150-200 years of age (Thomas et al. 1990). Thomas et al. (1990) notes that intensively used areas and roosting sites on the KNF contain trees with a mean age range of 73-367 years. Areas of salvage harvest or concentrated roadside hazard, in particular, will create large openings in the canopy that will persist and will not function as habitat for decades. *The removal of habitat structures will delay the development of late-successional habitat, in this case the development of [Nesting/Roosting/Foraging (NRF)] habitat ([Primary Constituent Elements (]PCEs) within treated areas that would otherwise occur if there were minimal intervention with post fire ecological processes. It will take several decades for the attainment of dispersal habitat (PCE 4) and longer for NRF habitat (PCEs 2 and 3).* Attainment of the PCEs will be ameliorated to an extent through the project design features and forest replanting efforts. Commercial salvage units generally include the retention of large snags and down wood, green trees, and trees within riparian reserves (or inner gorges).

Westside Project Biological Assessment at 125.

In sum, the Horse Creek project is not consistent with the standards or objectives contained in the LSR assessment. As such, the Klamath National Forest must seek

Proposed Resolution to Objection Point #1: Amend the project to be consistent with the LSR Assessment or obtain a consistency determination from REO prior to issuing a final ROD.

Objection Point #2: Failure to Consider Cumulative Impacts to Surface Erosion from Private Post-Fire Logging

The FEIS fails to consider the substantial cumulative impacts from private post-fire logging. As such, the FEIS fails to take the requisite "hard look" at cumulative watershed effects. This infirmity is particularly alarming, given the already heightened background risk ratios for most of the watershed.

The FEIS examines cumulative effects through three different models: equivalent roaded acres (ERA), a model is used to evaluate watershed disturbance, universal soil loss equation (USLE), which is used to evaluate soil erosion; and the Geology model (GEO), which is used to evaluate the potential for mass wasting. Of particular concern for EPIC is the application of the USLE model.

The eastern portion of the project area contains significant amounts of private industrial timberlands. Following the 2016 Gap Fire, private forest landowners filed numerous emergency notices. In EPIC's comments on the DEIS, we identified 21 emergency notices totaling 4,863 acres to be logged on private lands within the project area. See EPIC Comments at 10. In our comments on the DEIS, EPIC clearly identified our concerns that the cumulative watershed effects modeling failed to accurately record the impacts from this substantial private logging. *See* EPIC Comments at 19.

The Forest Service appears to issue conflicting statements whether the USLE model considered this private logging. In one place, the Klamath National Forests appears to state in the FEIS and accompanying resource reports that the USLE model considered the cumulative effects of this logging. *See, e.g.,* FEIS at 193 (stating that "current and future foreseeable actions considered for the analysis within the eleven 7th field watersheds can be found in Appendix C," which contains emergency notice logging as one of the types of "projects" considered by the model.) However, the Klamath National Forest continues to state that, "None of the eleven project area analysis watersheds have future projects to consider. The Horse Creek Project will be the only future project to consider. Therefore, the direct and indirect effects analysis for each of the action alternatives for the Horse Creek Project represents the cumulative effects analysis as well." *Id*.

The model results also suggest that the USLE failed to model effects from post-fire logging. To begin, the model results contain a category for "Estimated Soil Erosion from Future Actions (yd3/year)" but the column is blank. That is, the model does not include any inputs from ongoing or future futures. As such, the model's "Total Cumulative Risk Ratio" is identical to the background risk ration, identified in the model results as "Total Current USLE Risk Ratio." Some consideration of past emergency notice logging could have been considered under "Percent USLE contributed to Past Harvest and Wildfire," although the model does not explain what was considered in this category. Assuming for the sake of argument that this category included emergency notices filed at the time the model was run, the model did not likely consider the vast majority of the Emergency Notices filed within the project boundary. Notes accompanying the model state, "This data is a compilation of the outputs of the ERA, GEO and USLE CWE models that were ran by J Ford March 27 2017." *Cumulative Watershed Effects Model Results, FEIS* at page 13 of the .pdf. Even if the model has considered some cumulative effects, the date on which the model was run would miss most of the emergency notices that were filed. By March 27, only 6 Emergency Notices were filed totaling 1,143 acres. *See* ftp://thp.fire.ca.gov/THPLibrary/Cascade_Region/Exemption%20Notices/2017/; EPIC Comments at 10.

In sum, the FEIS failed to take the requisite "hard look" at the cumulative impacts of the project by failing to adequately examine the potential impacts from private post-fire logging.

Proposed Resolution to Objection Point #2: Please reevaluate cumulative watershed effects from private post-fire logging in a supplemental environmental impact statement before issuing a final record of decision.

Objection Point #3: USLE Modeling Fails to Take Hard Look at Direct Impacts

EPIC is further concerned that the USLE modeling fails to accurately account for the direct impacts from the project. The USLE model suggests that project logging will only cause a small increase in the model risk ratio, indicating a minor increase in surface erosion. This runs counter to the best available science that suggests that post-fire logging, particularly ground-based tractor and partial suspension skyline logging methods, generally cause a significant increase in sediment production and transportation compared to burned but unlogged control plots.

As one recent article described the model, USLE is "the most widely used, and misused, soil loss estimation equation in the world" (Kinnell, 2010). The USLE model was initially developed using agricultural soil loss data first gathered during the Great Depression and was originally used to predict soil loss from agriculture. It has since been expanded to various other applications.

The model has been refined throughout the years, including the creation of the Klamath Universal Soil Loss Equation (KUSLE), described in Elder and Reichert (2004), and is presumably the model used in the Draft Hydrology Report. Bell (2012) reports the KUSLE model works as such:

> Sediment Delivered (yrd^3/ac/yr) = [(0.7)*R*LS*D*K*C] x A
> A = Area (acres) of polygon; 0.7 = conversion factor (tons to yd3); R = Rainfall/runoff factor (what is a 2 year rain event); D = Delivery factor (what % of sediment will be delivered); C = Cover factor (related to disturbance class); LS = Slope-length/slope steepness factor; K = Soil erodibility factor (related to Soil Map Unit).

Modeled results are expressed as "risk ratios" and fall along a continuum. At a certain, albeit arbitrary, point, the risks from the project will pass a "threshold of concern."

The USLE model results published by the Klamath National Forests state that post-fire logging will result in, at *most*, 4.75 cubic yards of sediment/year. Cumulative Watershed Effects Model Results, FEIS at page 3 of the .pdf. As a result, the project's risk ratio does not significantly increase in relation to the background risk ration. This number is very low. So low that EPIC questions whether the model has been calibrated for use in a post-fire environment, as the best available evidence suggests that post-fire logging typically results in significant

sediment issues—often many orders of magnitude above control sites that burned but were not logged.

Harvesting can cause an increase in disturbance of the forest floor that in turn can increase erosive processes, both direct (e.g. mechanical mixing) and indirect (e.g. splash erosion). The magnitude of disturbance is influenced by the method of felling and yarding as well as the mitigation measures imposed, with ground-based extraction (feller-buncher felling, tractor skidding, and partial-suspension skyline yarding) causing greater levels of disturbance relatively to helicopter and full-suspension skyline yarding. *See* Klock (1975); Chou et al. (1994); Chase (2006); Slesak et al. (2015).

Harvesting is also associated with soil compaction. Increased soil compaction influences other processes, including increased runoff from reduced micro and macro soil porosity. Wagenbreener et al. (2016). Soil compaction and ground disturbance are also associated with impacts to returning vegetation. Post-fire logging has been shown to damage natural regeneration. Donato et al. (2006); Keyser et al. (2009). Vegetation, particularly increasing root strength, has been shown to reduce landsliding risk. Soil compaction has potentially long-lasting effects on plant development, potentially decades. Wert and Thomas (1981); Vora (1988). Logging has also been shown to reduce the amount of soil cover, both in litter and vegetative cover, compared to unburned areas, increasing the amount of bare soil susceptible to splash erosion. Wagenbrenner et al. (2016); Morgan et al. (2014); Chase (2006). A loss of surface cover also will increase surface flow velocities, resulting in more sheer stress for soil detachment and helping to creating rilling and gullying. Shakesby and Doerr (2006); Robichaud et al. (2010); McGuire et al. (2013); Wagenbrenner et al. (2014).

Skid trails, feller-buncher trails, cable rows, and other similar disturbances also influence sediment production. Such disturbances, when oriented perpendicular to the slope, can act as sediment traps; however, when parallel to the slope, these trails and tracks can help to concentrate surface flows, promoting rill initiation and sediment production. Wilson (1999); Ares et al. (2005); Chase (2006). Skyline or cable yarding generally requires trees be pulled uphill, creating a pattern of cable rows nearly parallel to the slope, which has been shown to create rills and increase sediment production. Chase (2006). Tractor logging created both parallel and perpendicular disturbances, in some cases helping to trap sediment, and in others acting to concentrate flows and increase sediment production.

It is difficult to untangle the water quality impacts from post-fire "salvage" logging from the effects of a fire. The multiple interacting variable help to explain the divergent and conflicting results from previous studies. In sum, a review of the best available science suggests that sediment production increases with soil disturbance and logging significantly increases ground disturbance compared to unlogged and burned sites, although sediment production may be minimized by best management

practices and mitigated through erosion control practices. A site specific review is necessary to determine potential effects.

Among studies that found logging had a minimal role in sediment production, mitigation measures and site-specific conditions (e.g. slope and precipitation) appear to be significant. McIver and McNeil (2006), which studied ground-based extraction of fire-killed timber from the Malhuer National Forest in Oregon, found relatively low amounts of sediment movement, however their results were likely influenced by site conditions (relatively erosion resistant soils, low- to moderate-slopes, natural regeneration, favorable weather conditions) and project mitigation measures (logging over snow or dry slopes). James (2015), which studied ground-based harvest on private industrial timberlands in Northern California, found that logging units had *less* sediment production than unlogged units, however the sediment savings likely came from post-logging mitigation, specifically contour ripping. Further, some amount of skepticism towards the study is warranted, as it was not peer reviewed and was produced on behalf of an industrial timber company. Other studies have found that subsoiling increased rill density and "new rills in the furrows appeared deeper and wider than the rills that were removed by subsoiling." Olsen (2016).

Klock (1975) examined disturbance from various logging methods in a post-fire forest. Tractor skidding produced a mean percent disturbance of 36% (although only 10% when over snow), 32% for skyline yarding without full suspicion, 2.8% for skyline yarding with full suspension, and less than 1% for helicopter logging. Chou et al. (1994), which examined percent ground disturbance after salvage logging on the Stanislaus National Forest, found that the mean disturbance for tractor logging was 35% and 18% for cable-logged. Chou et al., however, did not find a significant relationship between disturbance and sediment production.

Other studies have shown dramatic increases in sediment production within logging units. Wilson (1999) used rainfall simulators to examine sediment production in a simulated 10-year rainfall event. Sediment production from logged and burned plots produced considerable more sediment than unlogged and burned control sites (1.1 Mg ha^{-1} as compared to .05 Mg ha^{-1}).

Chase (2006), which examined sediment production from ground-based, skyline, and helicopter logging on the Eldorado National Forest in California. Generally, Chase found logging increased the amount of bare soil, mostly attributable to the loss of litter on logged sites. Various logging methods produced differing effects on bare soil, with helicopter yarded sites containing significantly less bare ground than tractor logged sites. Chase found no significant difference in sediment production between helicopter, skyline, and tractor logging, likely a result of multiple interacting variables. Regardless, logging related disturbance increased sediment production and likely increased the period of high runoff and erosion through the formation of rills, which will continue to incuse during larger storm events.

Silins et al. (2009), which examined sediment production following post-fire logging in Alberta, found that sediment production increased in burned and logged areas and that the rate was strongly mediated by site-specific factors as well an hydro-climatic controls. Silin et al. further found that sedimentation was exascerbated by two factors. First, the loss of bank vegetation resulted in the loss of bank stability thereby altering the morphology of watersheds. Second, skid trails and other down-slope trails and roads "served as conduits for overland flow and sediment transport" resulting in "increased availability and down slope movement of sediment in burned and salvage logged watersheds" as well as "accelerated sediment transfer and storage in adjacent streams."

Smith et al. (2011) reported that post-logging units in a burned pine plantation in southeast Australia increased total sediment yields by 180 and 33 times relatives to two burned but unlogged areas, although site specific differences, including burn severity, likely influenced results.

Wagenbrenner et al. (2014) looked at ground-based extraction (feller-buncher and skidder) in four different post-fire forests in the interior western United States and found that, although sediment production varied widely between plots and years, found, "Sedimentation production rates from the skidder plots were typically at least two orders of magnitude higher than the values from the control plots. Sediment production from the feller-buncher plots were usually intermediate between the skidder and control plots." Among the various factors influencing sediment production Wagenbrenner et al. found that, "but for a given location and rainfall intensity the key concerns are the amount of soil compaction and the amount of surface cover."

Slesak et al. (2015), which examined skyline logging in southern Oregon three and four years after a fire, found that mean hillslope erosion was significantly greater in logged areas compared to the control. Some additional factors likely contributed to this result. Slesak et al. compared sedimentation rates from non-logged federal lands to logged private lands, which followed harvest with herbicide "site preparation." Post-logging herbicide application is generally not utilized on federal public lands.

Olsen (2015) examined ground-based logging on the Rim Fire in the Sierra Nevada mountains of central California. Within areas of high tractor traffic, soil bulk density increased, field saturated hydraulic conductivity reduced, and bare soil increase, which initiated rills more often than within untrafficked areas.

Garcia-Orenes et al. (2017), which examined ground-based logging in Spain, found that salvage logging resulted in "significant soil degradation," including loss of soil organic matter, likely to do higher erosion rates than the unlogged burned control.

In sum, the best available science suggests that post-fire logging generally has a significant effect on sediment production and delivery.

Turning to a site-specific examination of the project, multiple project component cause concern. The projects proposes two types of "salvage" logging systems: ground-based and skyline. First, the project proposes 880 acres of "tractor" based logging systems. FEIS at 39. Trees would be felled by a feller-bunchers and logs would be skidded by a rubberwheeled skidder tractor. Both require heavy machinery that will compact and disrupt the ground. Wagenbrenner et al. (2014) found that skidders plots produced sediment at two orders of magnitude higher than controls while feller-buncher plots produced sediment at a rate in between skidder and control plots. The difference between skidder and feller-buncher sediment rates is likely because skidders generally work perpendicular to the slope, dragging logs to landings, while feller-bunchers will create tracks both perpendicular and parallel to the slope. As Chase (2006) and Silins et al. (2008) found, skid trails and other disturbances that run with the slope will help to channelize waterflow, both increasing sediment through rill creation and accelerating the delivery of sediment.

The remainder of units, 800 acres, would be felled by hand and yarded by partial-suspension cable or skyline yarding. FEIS at 39. In partial suspension yarding, one end of a tree (or trees) touches the ground while the other end is in the air. Klock (1975) found the disturbance levels between skyline and tractor skidding to be fairly similar, however skyline units will not also be impacted by feller-buncher tracks. Although Klock (1975) did not examine sediment production, Slesack (2015) found higher levels of sediment coming from skyline units than control

Where neither of these methods are feasible, timber operators will use "winching," whereby felled trees are dragged to landings. Presumably, given the logs will be dragged along the ground, this logging will produce similar effects to partial suspension skyline logging.

In addition to the salvage, the project also includes 315 acres of "roadside fuel treatments"—areas on either side of the road. Some roadside fuel treatment areas would be sold in manner consistent with a salvage timber sale. Many trees in the roadside area would likely be cut and winched to the road deck.

All logging areas are likely to suffer impacts to natural regeneration, with effects from ground-based harvest likely more severe than skyline. Donato et al. (2006); Keyser et al. (2009). Similarly, all units are likely to suffer a loss of surface cover as a result of logging, *see* Wagenbrenner et al. (2016); Morgan et al. (2014); Chase (2006), increasing surface flow velocity, scouring and rilling. Shakesby and Doerr (2006; Robichaud et al. (2010); McGuire et al. (2013); Wagenbrenner et al. (2014). After logging, all logging units will undergo "site preparation." Site preparation will include both treatment of logging slash as well as the removal of returning

vegetation. FEIS at 30. In Slesak (2015), site preparation was thought to be a major contributing factor in increased sedimentation rates, although in Slesak, site preparation included herbicide application, something not included in the project. The likely reason that the model does not correspond to the best available science is that the model does not consider some project activities that the aforementioned science found to have an important impact on sedimentation. Bell (2012) notes that many project activities pertinent to the Horse Creek Project are typically captured by the model, including but not limited to: "New road construction—'temporary' or otherwise"; "New or enlarged landing construction"; "Other fuel treatments associated with timber sales"; and "Wildfire – 'high' and 'moderate' burn intensities." However, many activities specific to this project that are likely to generate sediment pollution are not typically modeled, including but not limited to: "Re-opening existing roads"; "Skid trails"; and "Re-opening existing landings." In short, the model fails to take a hard look at the environmental effects of the project by underestimating direct impacts of the project.

Proposed Resolution to Objection Point #3: Please issue a supplement or an addendum to the EIS that reevaluates the direct effects of the project or engage in new modeling that more accurately evaluates the likely directs impacts of the project.

Objection Point #4: The FEIS Failed to Review a Reasonable Range of Alternatives

The FEIS failed to examine the Karuk Alternative. In doing so, KNF failed to examine a reasonable range of alternatives.

The alternative section is "the heart of the environmental impact statement," 40 C.F.R. § 1502.14. NEPA requires a federal agency to give a "detailed statement . . . on . . . alternatives to the proposed action" and to "study, develop, and describe appropriate alternatives...." 42 U.S.C. § 4332(2)(C) and (E); *California v. Block,* 690 F.2d 753, 766 (9th Cir.1982) (*Block*). Judicial review of the range of alternatives considered by an agency is governed by a "rule of reason" that requires an agency to set forth those alternatives necessary to permit a "reasoned choice." *Save Lake Washington v. Frank,* 641 F.2d 1330, 1334 (9th Cir. 1981); *Life of the Land v. Brinegar,* 485 F.2d 460, 472 (9th Cir. 1973), *cert. denied,* 416 U.S. 961, 94 S.Ct. 1979, 40 L.Ed.2d 312 (1974). As with the standard employed to evaluate the detail that NEPA requires in discussing a decision's environmental consequences, the touchstone for our inquiry is whether an EIS's selection and discussion of alternatives fosters informed decision-making and informed public participation. *Save Lake Washington,* 641 F.2d at 1334. The "existence of a viable but unexamined alternative renders an environmental impact statement inadequate." *Citizens for a Better Henderson v. Hodel,* 768 F.2d 1051, 1057 (9th Cir.1985).

The Karuk Tribe has lived in the mountains of the Klamath National Forest since time immemorial. The Karuk, however, do not have a tribal reservation or other lands held in trust by the government for the tribe. Instead, the vast majority of the tribe's lands are owned by the United States and managed by the U.S. Forest Service. As a result, the Karuk Tribe is deeply invested in sustainable forest management. The Tribe seeks to promote a wide range of forest values, including rural jobs, but also including returning fire to the landscape, promotion of non-merchantable tree species, reduction of forest-generated sediment to nearby fish-bearing waters, and the promotion of other native species, such as bear grass, that are vital to the Tribe.

Because the Karuk Tribe is deeply invested in sustainable forest management, the Tribe submitted to the Forest Service a proposed alternative to be included and evaluated as an alternative, the "Karuk Alternative." The Karuk Alternative has drawn the support of major conservation organizations and objectors to the draft ROD as well as over 700 individuals who commented on the project because the Alternative would help move the Klamath National Forest towards a sustainable fire future. Despite this outpouring of support, the Klamath National Forest has refused consider the THP. As explained below, this refusal violates NEPA's mandate to study a reasonable range of alternatives.

The FEIS studied four alternatives, a "no action" alternative and three other alternatives. Each of the three other action alternatives proposes significant post-fire "salvage" logging. The three action alternatives all consider logging in excess of 1,100 acres. No alternative evaluates a significantly smaller amount of salvage logging.

The FEIS offers three reasons why it would not evaluate the Karuk Alternative. EPIC does not find any of the stated reasons persuasive. First, the THP says that because the Karuk Alternative removes logging units and this would cause increased fire danger:

> The Karuk Alternative has a reduction of approximately 2,460 acres of these combined treatments when compared to Alternative 2. These areas would no longer benefit from treatments described in Alternative 2, and would resemble the No Action Alternative. As a result, there would be an increase in flame length potential, fireline intensity, and resistance to control. Desired conditions would no longer be met in the mid- to long-term within or adjacent to the areas removed from treatments in the Karuk Alternative. This includes areas adjacent to the private property buffer to the community of Horse Creek. This would decrease community and firefighter safety and reduce the effectiveness of private property buffer treatments in the event of future wildfire, thereby not meeting the purpose and need of the project.

The Klamath National Forest's justification does not hold water.

Second, KNF states that the impact to northern spotted owls owls from the Karuk Alternative would be too great. KNF states,

> Roadside fuels treatments proposed in the Karuk Alternative did substantially differ from our proposed action by adding 109 acres. The location of this addition within LSR and critical habitat for northern spotted owl would lead to downgrading about 80 additional acres of suitable habitat. Since roadside hazards would be abated in this area without the additional treatment, we are unwilling to accept the additional toll on northern spotted owl critical habitat and this proposed treatment is not further considered in detail.

FEIS at 67.

The Klamath National Forests' purported concern for the spotted owl rings disingenuous. The Karuk Alternative is supported by the major environmental watchdog groups of the Klamath National Forest—EPIC, Klamath Forest Alliance, and the Klamath-Siskiyou Wildlands Project. The Karuk Alternative may cause more habitat downgrading in certain areas, but it more than makes up for this by removing other harmful project features. While the Klamath National Forest highlights impacts to owls from roadside fuel treatment, it did not analyze how many acres of owl habitat were spared by significantly reducing post-fire "salvage" logging. As made clear in the Biological Opinion issued for the adjacent Westside Project, salvage logging removes owl habitat in the short-term and reduces forest complexity in the long-term, reduces habitat quality for spotted owls.

To the degree that the impacts to spotted owls are contentious, subject to debate, or a point of major concern, this is precisely why the Karuk Alternative should be studied as an alternative. Consideration of the Karuk Alternative would enable informed public debate on the project.

Lastly, the Klamath National Forest claimed that by not replanting, the Karuk Alternative would not meet the project's purpose and need or Forest Plan objectives. FEIS at 68.

In our comments, EPIC has shown that reforestation is not necessary. There is abundant natural regeneration occurring, both conifer seedlings and hardwood stump sprouting. Furthermore, there are sufficient seed sources that will help these areas naturally recover. The project, however, creates the "need" for reforestation by harming natural regeneration, *see* Donato et al. (2006), and removing potential seed trees.

In short, the Klamath National Forest had an obligation to review the Karuk Alternative but failed to do so.

Proposed Resolution to Objection Point #4: Please issue a supplement or an addendum to the EIS that evaluates the Karuk Alternative.

Objection Point #5: Horse Creek FEIS Fails to Meet Klamath LRMP Standards and Guidelines for Northern Goshawk and NEPAs "Hard Look" Standard

The Klamath LRMP establishes clear Standards and Guidelines for the northern goshawk. Specifically at page 4-29 (emphasis added):

> I. Primary Nest Zone
>
> **Establish a 0.5 mile radius circle** (504 acres) around the last known nest or the geometriccenter of a cluster of all known nests. **Within this circle, maintain** 40% (200 acres --California Cascades/Eastern Klamath Province) or **60% (300 acres – Western Klamath/California Coastal Provinces) in dense mature forest cover** (>60% CC, >24inches DBH [4B,C+]). The existing nest stand should be used to determine desired forest structure. **This** 200-acre (or **300-acre) area should include the active and historic nest stands and be as contiguous as possible** relative to existing conditions. The remaining 60% (or 40%) should be managed for a habitat mosaic **dominated by large-tree conditions** and open understories (3N,G - 4P,N,G+), but lower canopy closure (40-60%) and small openings are allowable. Encourage the use of underburning, precommercial thinning and fuels reduction to achieve desired habitat conditions.
>
> II. Foraging Habitat Zone
>
> Establish a 1-mile radius circle (2,010 acres: 1,506 acres excluding Primary Nest Zone) centered on the Primary Nest Zone. **Maintain 60% (900 acres) in a mosaic of mid-mature (3N,G+) to late-successional forest condition. Desired conditions include open understories, large CWD, large snags, and small openings**. The remaining 40% can be younger stands with small openings. Encourage the use of underburning, fuels reduction, and thinning to achieve desired habitat conditions.
>
> III. Disturbance
>
> **Restrict habitat-modifying activities between March 1 and August 31 within Primary Nest Zone (0.5 mile radius). Restrict loud and/or continuous noise within 0.25 miles of active nest sites during the same period.** Normal levels of vehicle traffic on existing roads may be excluded in cases where goshawks appear to be habituated to such activities.

The FEIS and supporting wildlife documents do not contain any specific data or information on the location of the seven nest sites within the project area nor do

they disclose what is being proposed in the nest areas. This fails to meet the NEPA "hard look" requirement. All that is disclosed on the current condition is that, at FEIS page 251, "Middle Creek and Hamburg Gulch territories had about 240 acres of nesting and foraging habitat burned in each territory at moderate and high fire severity. Each of the other five territories experienced less than 60 acres of nesting and foraging habitat burned at moderate or high fire severity. Given the changes to the habitat, only one of the seven territories meet the Forest Plan standard and guideline (page 4-29) habitat minimums; this territory is mostly outside the Gap fire perimeter and received only small changes in habitat abundance due to the fire. Six territories do not meet habitat minimums. Alternatives 2, 3, and 4 would downgrade or remove habitat in all seven goshawk territories. To further degrade this habitat is contrary to agency requirements. Further, it is not appropriate to lump high and moderate severity fire, or nesting and foraging habitat nor is it sufficient to lump the removal and degradation of habitat, as the each have distinguishably different characteristics and effects.

Within the 0.5 mile primary nest zone at least 60% must be kept in dense mature forest cover and the other 40% must retain all dominant trees. This reiterates the need to retain all live green trees large and small within this half-mile area.

The Foraging Habitat Zone must be maintained in a mosaic of mid-mature and late-successional forest condition. This again reiterates the need and requirement to retain all green trees and large snags in this 1 mile radius circle, outside of the Primary Nest Zone.

Information from the USDA at, https://www.fs.fed.us/database/feis/animals/bird/acge/all.html shows that northern goshawks have a high fidelity to their nest sites and they will alternate between as many as 8 alternate nests within a nest area. Occupancy rates are reduced by removing forest cover in the home range, which thereby results in reduced productivity because there are fewer active breeding territories. Though northern goshawks are most often documented nesting in late-successional forests, they sometimes nest in younger, more open forests. Postfledging family areas, usually between 300-600 acres, provide hiding cover and prey for fledglings to develop hunting skills. They typically contain patches of dense trees, herbaceous and/or shrubby understories, and habitat attributes that support prey, such as snags, and downed logs.

Proposed Resolution to Objection Point #5: Retain all green trees and large snags within Primary Nest and Foraging Habitat Zones. Do not remove or degrade habitat within the established 1.5 mile Northern goshawk zones.

Objection Point #6: Horse Creek Project Violates the Clean Water Act, and the Water Quality Control Plan for the North Coast Region (Basin Plan)

The project would increase sediment and temperature in 303(d) listed watersheds and would negatively affect the beneficial uses of water. Horse Creek is 303(d) listed under the Clean Water Act as impaired for nutrients, organic enrichment/low dissolved oxygen, and water temperature. The Mid-Klamath Hydrologic Area was listed for sediment in 2008. In the past three years Horse Creek and many near tributaries, which serve as salmon refugia and critical habitat, have seen deleterious effects from logging, roads, storms, wildfire, fire suppression and other factors. These same tributaries include, but are not limited to, Beaver Creek, Scott River, Elk, Walker and Grider Creeks have suffered negative impacts for decades

Federal land management activities that result in sediment pollution, such as logging, road construction, and grazing, must comply with the California Porter-Cologne Water Quality Control Act (Act) and the Water Quality Control Plan for the North Coast Region (Basin Plan). The Act and the Basin Plan prohibit the discharge of materials that adversely affect the beneficial uses of the waters of the State. The Horse Creek project would negatively affect the beneficial uses of water, including, municipal and domestic water supply, freshwater replenishment, water contact recreation, commercial and sport fishing, cold freshwater habitat, wildlife habitat, rare, threatened, or endangered species, spawning, reproduction, and/or early development, Native American culture and subsistence fishing.

The USFS reasoning is flawed for multiple reasons.

> FEIS at page 186 states, "*Little to no change in risk ratio to the models means that water quality may be affected but the beneficial uses in the watershed are still occurring with nuisance interruptions in the natural processes. A discernable change in the risk ratios means that water quality is being affected and there are interruptions to beneficial uses in the watershed.*"

First, please see above in these comments addressing issues with modeling. Second, industrial private lands post-fire logging combined with fire effects, roads and grazing are negatively affecting water quality, controllable sediment pollution and increasing water temperatures should be avoided. Middle Horse Creek reach exceeds reference conditions for three of four sediment indices. Affects to water quality are already currently adverse in Middle Horse Creek and possible adverse in the Horse Creek main stem, with human-related sediment sources being the likely cause in both watersheds. Four of the project area watersheds have an ERA risk ratio above 1.0. Third, scale of impacts are important hers considering that the Mid Klamath Hydrologic Unit (HU) including Ukonom, Happy Camp, Seiad Valley, Beaver Creek and the Scott HU including Scott Bar are all recently impacted by wildlfire, fire suppression activities, roads and storm events, as seen from the 2016-2017 winter season and post-fire logging. Collectively there is a discernable change in Mid Klamath watersheds and it is questionable if watershed objectives in the Basin Plan.

> The Response to Comments on page 107, concerning the attainment of ACS objectives, states, "*Project design features ensure the project will not prevent the attainment of the objectives in the short or long term at the site and 5th-field scale. The decrease in future risk of high-severity fire due to reduction of heavy fuels in project salvage units will help to maintain and restore watershed processes identified in the aquatic conservation strategy objectives in the long term. Site preparation and planting will decrease the time needed to recover forests. Proposed fuels reduction treatments will build upon the beneficial effects produced by the Gap Wildfire and will further reduce fuels.*"

First, the Klamath National Forest cannot continually and cumulatively rely on BMPs and Project Design Features to eliminate/control project activity impacts. As stated in our DEIS comments, BMP and PDF mitigations are not 100% effective or 100% implemented. While the agency does state, at Response to Comments page 110, "The Forest concurs that even well-implemented best management practices and project design features may not completely eliminate all impacts to water quality….[when] BMP failures occur, corrective actions are taken and documented." While we appreciate the effort, only a small fraction of USFS projects are monitored and negative impacts to water quality still occur. The agency does not account for this shortcoming yet continues to heavily rely on these mitigations for protecting water quality.

Secondly, the project does not guarantee a decrease in high severity fire as seen in the recent post-fire logging in the Westside project, where logging activity slash and cull trees left on the forest floor, which are too large to treat manually, may actually increase fire behavior in the future. In the Response to Comments pages 15 and 61 the agency states, "In the Horse Creek Project, activity generated slash will be burned when logging is completed reducing surface fuels to levels consistent with low fire hazard."

This may not be possible, as seen from these Westside implementation photos below.


Road 46N51


Grider Ridge Road


Walker Road

Third, as seen from the forest floor in the project area, the proposed ground-based and skyline units are naturally regenerating. Thus, the proposed logging will hinder recovering post-fire forests. Site preparation and planting are not needed to "decrease the time needed to recover forests".

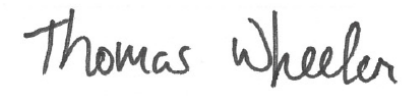
Lastly, fuels treatments are not guaranteed and are dependent on future funding. All of these issues above reflect impacts to water quality.

Proposed Resolution to Objection Point #6: Reduce project footprint and fully protect water quality and the beneficial uses of water, especially cold freshwater habitat, wildlife habitat, for rare, threatened, or endangered species, spawning, reproduction, and/or early development, Native American culture and subsistence fishing.

Conclusion

The issues and concerns contained in Objection Items listed above were previously identified to the Forest Service by our organizations in our scoping and DEIS comments during this planning process and hence we have organizational "standing" to raise these concerns in an Objection.

Thank you for considering the comments, concerns, and suggestions detailed in this objection.



Thomas Wheeler
Executive Director
Environmental Protection Information Center (EPIC)
145 G. St., Suite A
Arcata, CA 95521

Kimberly Baker
Executive Director
Klamath Forest Alliance
PO Box 21
Orleans, CA 95556

George Sexton
Conservation Director
Klamath Siskiyou Wildlands Center
PO Box 102
Ashland, OR 97520
(541) 488-5789

References

Ares, Adrian, et al. "Ground-based forest harvesting effects on soil physical properties and Douglas-fir growth." *Soil Science Society of America Journal* 69.6 (2005): 1822-1832.

*Bell. A. 2012. Summary of Cumulative Watershed Effects Modeling Process, Klamath National Forest. Yreka, CA.

Chase, Eric Hafen. *Effects of a wildfire and salvage logging on site conditions and hillslope sediment production: Placer County, California*. Diss. Colorado State University, 2006.

Chou, Y.H., S.G. Conard and P.M. Wohlgemuth, 1994. Analysis of post-fire salvage logging, watershed characteristics, and sedimentation in Stanislaus National Forest. In *Proceedings of ESRI Users Conference.* Environmental Systems Research Institute, Redlands, CA pp.492-499.

Crotteau, Justin S., J. Morgan Varner, and Martin W. Ritchie. "Post-fire regeneration across a fire severity gradient in the southern Cascades." *Forest Ecology and Management* 287 (2013): 103-112.

Donato, D. C., et al. "Post-wildfire logging hinders regeneration and increases fire risk." *Science* 311.5759 (2006): 352-352.

Don Elder and Mark Reichert, Klamath National Forest, "Cumulative Watershed Effects Analysis Quantitative Models for Surface Erosion, Mass Wasting and ERA/TOC;" February 9, 2004.

García-Orenes, F., et al. "Effects of salvage logging on soil properties and vegetation recovery in a fire-affected Mediterranean forest: A two year monitoring research." *Science of The Total Environment* 586 (2017): 1057-1065.

James, C., 2014. Post-wildfire salvage logging, soil erosion, and sediment delivery-Ponderosa Fire, Cattle creek Watershed, Northern California, Sierra Pacific Industries, Redding, California.

Kinnell, P. I. A. "Event soil loss, runoff and the Universal Soil Loss Equation family of models: A review." *Journal of Hydrology* 385.1 (2010): 384-397.

*Klock, G.O., 1975 Impact of five post-fire salvage logging systems on soils and vegetation. Journal of Soil and Water Conservation 30: 78-81.

McGuire, Luke A., et al. "Controls on the spacing and geometry of rill networks on hillslopes: Rain splash detachment, initial hillslope roughness, and the competition between fluvial and colluvial transport." *Journal of Geophysical Research: Earth Surface* 118.1 (2013): 241-256.

McIver, James D., and R. McNeil. "Soil disturbance and hill-slope sediment transport after logging of a severely burned site in northeastern Oregon." *Western journal of applied forestry* 21.3 (2006): 123-133.

Morgan, Penelope, et al. "Vegetation Response to Burn Severity, Native Grass Seeding, and Salvage Logging." *Fire Ecology* 11.2 (2015).

Olsen, Will. Effects of wildfire and post-fire salvage logging on rill networks and sediment delivery in California forests. Thesis. Michigan Technological University, 2016

Robichaud, P. R., J. W. Wagenbrenner, and R. E. Brown. "Rill erosion in natural and disturbed forests: 1. Measurements." *Water Resources Research* 46.10 (2010).

*Shakesby, R. A., S. H. Doerr, and R. P. D. Walsh. "The erosional impact of soil hydrophobicity: current problems and future research directions." *Journal of hydrology* 231 (2000): 178-191.

Shatford, J. P. A., D. E. Hibbs, and K. J. Puettmann. "Conifer regeneration after forest fire in the Klamath-Siskiyous: How much, how soon?." *Journal of Forestry* 105.3 (2007): 139-146.

Silins, Uldis, et al. "Sediment production following severe wildfire and post-fire salvage logging in the Rocky Mountain headwaters of the Oldman River Basin, Alberta." *Catena* 79.3 (2009): 189-197.

*Slesak, Robert A., Stephen H. Schoenholtz, and Daniel Evans. "Hillslope erosion two and three years after wildfire, skyline salvage logging, and site preparation in southern Oregon, USA." *Forest Ecology and Management* 342 (2015): 1-7.

Smith, Hugh G., et al. "Wildfire and salvage harvesting effects on runoff generation and sediment exports from radiata pine and eucalypt forest catchments, south-eastern Australia." *Forest Ecology and Management* 261.3 (2011): 570-581.

*Vora, Robin S. "Potential soil compaction forty years after logging in northeastern California." *The Great Basin Naturalist* (1988): 117-120.

Wagenbrenner, Joseph W., and Peter R. Robichaud. "Post-fire bedload sediment delivery across spatial scales in the interior western United States." *Earth Surface Processes and Landforms* 39.7 (2014): 865-876.

Wagenbrenner, Joseph W., et al. "Effects of post-fire salvage logging and a skid trail treatment on ground cover, soils, and sediment production in the interior western United States." *Forest Ecology and Management* 335 (2015): 176-193.

*Wert, Steve, and Byron R. Thomas. "Effects of skid roads on diameter, height, and volume growth in Douglas-fir." *Soil Science Society of America Journal* 45.3 (1981): 629-632.

Wilson, Cathy J. "Effects of logging and fire on runoff and erosion on highly erodible granitic soils in Tasmania." *Water Resources Research* 35.11 (1999): 3531-3546.

*Document not attached to this petition