

APPENDIX 3: Response to Comments

Comment Number	Comment	Response to Comment
1-1	Please include these opposing view source documents in the References section of the final EA or EIS. When describing the environmental effects of the timber sale activities to the countless natural resources in the project area please cite the resource damage described in the source documents contained in the attachments.	The “opposing views” supplied by the supporting documents may be a matter of interpretation. Often, the text cited in the opposing view is not supported by the document itself. Where noted as taken out of context, the opposing view is sometimes being refuted as an example in the cited document. See response to Comments 1-3 and 1-4 for more information.
1-2	It violates the law to give the public a skewed (one sided) description of the environmental effects of a proposed project as you have done in this preliminary assessment. I suggest you become familiar with the meaning of “hard look.” You should also read the Administrative Procedures Act.	First, the courts' interpretation of NEPA's “hard look” requirement is that the agency has the "requirement of a substantial, good faith effort at studying, analyzing, and expressing the environmental issues in the [analysis] and the decision-making process, and a recognition that a rule of reason must prevail because an [environmental document] which fully explores every relevant environmental detail could never be drafted" (Natural Resources Defense Council v. Morton, 458 F.2d 827, 838 (D.C. Cir., 1972)) [USDA Website - The "Hard Look" Doctrine]. The environmental analysis process for this project provides good faith analysis and sufficient information to allow a firm basis for weighing the risks and benefits of a proposed action as required by the “hard look” requirement. Second, the Administrative Procedures Act (APA) (5 U.S.C. 551 et. seq.) is the basic government-wide authority for rulemaking. It requires agencies to give the public notice of and the opportunity to comment on all proposed rules and statements having general applicability and legal effect; sets time requirements for public notice; and specifies procedures to be followed in the rulemaking process. Since the APA governs rule-making, it is not applicable to this project. The public notice requirements for this project are governed by NEPA. This project has followed all the requirements set forth in NEPA as well as the Council on Environmental Quality regulations concerning NEPA.

Comment Number	Comment	Response to Comment
1-3	<p>The opposing views quoted in Attachment #1 were authored and/or signed by 237 different unbiased Ph.D. biological scientists with no connection to the USDA. Does it surprise you that about 77% of the source documents listed in the References section of this preliminary assessment that drove the project are authored by USDA employees with financial incentives to portray logging as ecosystem friendly? Intelligent Americans will immediately detect bias towards logging in the References.</p>	<p>Attachments #1 contains short statements that analyze forest management actions. Many of the statements analyze practices that are not proposed as part of the project, including clear cutting, salvage harvesting and hazardous fuels reduction. Many of the statements are opinion pieces. Those statements that relate to scientific research that are relevant to this project have been examined and are concepts that are commonly understood by the scientific specialists on the interdisciplinary team. The Proposed Action was developed with an understanding of the relevant science. The science behind plantation thinning is sufficiently understood and is not highly controversial based on a review conducted for this project. A thorough review of relevant scientific information, including that contained in attachments, was conducted as part of this project.</p>
1-4	<p>The opposing views quoted in Attachment #4 were authored and/or signed by 52 different unbiased Ph.D. biological scientists with no connection to the USDA. They indicate that road construction inflicts more resource damage than any logging-related activity.</p>	<p>Attachment #4 contains short statements about the impacts of roads. Some of the statements represent opinions. Those statements that relate to scientific research have been examined and are concepts that are commonly understood by the scientific specialists on the interdisciplinary team. The Proposed Action has been found to be consistent with the relevant science. The science behind the description of the effects of roads is understood and is not highly controversial based on a review of the project record. The No Action alternative as described in Section 2.1 includes no road construction. A full analysis of the impacts from the proposed road treatments can be found in Section 3.2, Transportation Resources, and the impacts of the road treatments on each resource area is described in Chapter 3.</p>
1-5	<p>The attachments contain statements by over 500 nationally recognized Ph.D. biological scientists who describe how and why logging and road construction inflict long-term, irreversible damage to countless natural resources in the forest.</p>	<p>See response to Comments 1-3 and 1-4.</p>
1-6	<p>Does the Responsible Official believe their TMA and silviculturist know more about the ecological impacts of logging and roading than the 500 scientists quoted in the attachments? Yes or No. Please explain.</p>	<p>See response to Comments 1-3 and 1-4.</p>

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1-7	After reading the quotes in the attachments does the Responsible Official feel comfortable basing her decision to proceed with the Red Hills timber sale based on the advice of the TMA and silviculturist? This rejects the research conclusions of 500 scientists. It does not reflect sound decision making when you take the word of the TMA or silviculturist with a financial incentive to proceed rather than believing well-respected scientists.	See response to Comments 1-3 and 1-4.
1-8	Please do not discount the scientist’s observations by claiming: 1) there will be no compelling, major adverse natural resource impacts because the timber sale planning is guided by BMPs and the forest plan unless the Responsible Official identifies the specific guidance, where it is applied and how the guidance will mitigate the likely impact to the resources.	Appendix 2 contains site-specific Best Management Practices (BMP) for this project, including information on implementation and monitoring. Also, Section 2.3 contains Project Design Criteria (PDC). NEPA defines “mitigation” as avoiding, minimizing, rectifying, reducing, eliminating or compensating project impacts. PDC are an integral part of this project and would be carried out if the project is implemented. In most cases, the effects analysis in Chapter 3 is based on these project design criteria and mitigation measures being implemented. Section 3.5, Water Quality describes how the PDC and BMPs would minimize the impacts associated with the Proposed Action.
1-9	. . . claiming they are not site-specific to this timber sale. All the damage discussed by the scientists is clearly intended to apply in all cases where an action occurs. If the Responsible Official still claims the scientists’ predictions do not apply because they are not sit-specific then the Responsible Official must not include and literature in the References section of the final NEPA document that does not mention the name “Red Hill.”	The reference section coincides with the citations made throughout the Environmental Assessment (EA). Many of the references used are from peer-reviewed scientists (see References). It is not intended as a library of all research or a compendium of opinions of scientists.
1-10	. . . rejecting the opposing views because they are “opinions” won’t work. View and opinion are synonyms.	Review of the substantial supporting literature in the opposing view attachments contains a considerable number of citations that are peer reviewed literature taken out of context, outdated science, and non-peer reviewed documents and transcripts, such as biased testimony and opinion/position papers written by non-subject matter experts. These citations were useful for gauging opinions of a certain sector of the population. See response to Comment 1-3 and 1-4.

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1-11	In order to assure that the logs will be processed by local labor in the woods and the logs are hauled to local mills the sale must be sold under the small business authority (SBA). The preliminary assessment does not indicate this will be the case.	The contract mechanism to implement this project will be determined, following a decision by the Responsible Official and completion of the pre-sale layout work. Potential contract mechanisms include a timber sale contract, an integrated resource timber contract (IRTC) or an integrated resource service contract (IRSC). SBA can be implemented under a timber sale contract. Both the IRTC and IRSC contracts have evaluation criteria, including local workforce.
1-12	In the final EA or EIS please identify the names of the local communities that need economic help by providing more raw materials for wood products.	As stated in Section 3.15, the communities of Mt. Hood/Parkdale, Odell and Hood River are less than 20 miles of the project area. The communities of Dufur and The Dalles are less than 20 miles to the east / northeast of the project area. All of these communities have local logging operations.
1-13	Not all local communities have a timber extraction-based economy. In the final EA or EIS please include the economic analysis showing that the particular communities needing economic help by provide more raw materials for wood products: 1) have a timber-based economy, and 2) the economy is in jeopardy because of the lack of timber.	The overall purpose of this project is to improve the overall forest conditions within the watershed (Section 1.3). Although one of the underlying needs to meet the purpose and need for this project is to provide wood fiber for local and regional economies, it is not the goal of this project to improve the economy of a specific community or communities. Rather, the goal is to meet the intent and direction set forth in the Northwest Forest Plan (see Section 2.2.3). One of the dual goals of the Northwest Forest Plan is to provide a sustainable level of forest products for local and regional economies and to provide jobs. The Northwest Forest Plan Final Environmental Impact Statement has an in-depth analysis of the economic basis behind the goal of providing forest products for local and regional economies. It also contains an analysis of the social and economic benefits and impacts of preservation, recreation and other values. To benefit local and regional economies, timber is auctioned to bidders. For contracts to sell they must have products that prospective purchasers are interested in and they must have log values greater than the cost of harvesting and any additional requirements.

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1-14	<p>Since the Responsible Official must obtain a NPDES permit from EPA before any activity may commence on this timber sale, the Decision Document must state that the permit will be obtained immediately after the decision document has been signed. Given the trustworthiness of the USFS, telling the public “we’ll get it later” is unacceptable.</p>	<p>At this time it is uncertain whether this project would require a National Pollution Discharge Elimination System (NPDES) permit as described in Section 3.5.4. Until September 30, 2012, no NPDES permits are required for stormwater discharges from roads associated with silvicultural activities. Should it be determined that an NPDES permit is required for this project, the Forest Service would comply with any applicable NPDES permitting requirements, as required by EPA.</p>
1-15	<p>Section 101(b)(4) requires all USFS to support biodiversity. This human manipulation of the natural forest conditions significantly harms the biodiversity of the area. The final NEPA document must contain a section detailing how the diversity of fish and wildlife habitat will be maintained with this project.</p>	<p>Section 3.6, Fisheries & Aquatic Fauna and Section 3.8, Wildlife provide a full analysis of how this project would impact the fish and wildlife habitat located within the project area, as well as any habitat located outside the project area that is needed by the species present. These sections analyze the impacts to endangered, threatened, sensitive, survey and manage, and management indicator species.</p>
1-16	<p>The quote below from the USFS survey discussed above proves that the Proposed Action in the Red Hill timber sale is the antithesis of what the American public want done to their precious national forest land: “The public sees the restriction of mineral development and of timber harvest and grazing as being more important than the provision of natural resources to dependent communities (although this is still seen as somewhat important).” (Pg. 28)</p>	<p>This publication contains “survey results that will help the agency understand the public’s <i>objectives</i>, as well as the underlying value sets that are the basis for these <i>objectives</i>. The data on <i>beliefs</i> provides information on the degree of importance that the public associates with their objectives. The attitudinal measures provide a useful insight into the public’s evaluation of how the USDA Forest Service is meeting or fulfilling these objectives” (page 1). The executive summary states: “Goal 1: Ecosystem Health. There is wide support for the first goal described in the USDA Forest Service Strategic Plan, as the public sees the promotion of ecosystem health as an important objective for public lands and such protection as an important role for the USDA Forest Service” (page 2). As states in Section 1.3, the overall purpose of this project is to improve the overall forest conditions within the watershed (ecosystem health). The executive summary also states: “Economic Development. These items address determination of the level of extractive uses of public lands. These objectives are supported at least moderately by the public” (page 3). As such, the statement as presented is taken out of context of this publication as well as this environmental analysis.</p>

Comment Number	Comment	Response to Comment
2-1	<p>Additionally, the Red Hill Timber Sale should be considered in the context of its cumulative relationship to the proposed Lava, Polallie-Cooper, and Horseshoe Timber Sales. These four proposed project areas are situated in close proximity and collectively span thousands of acres across the entire north side of Mt. Hood. Red Hill does not exist in a bubble. If all four of these projects proceed as planned, the north side of Mt. Hood could experience upwards of 7,000 acres of logging within a short time frame. It is irresponsible to move forward with the Red Hill timber sale without considering the cumulative impacts of the proposed timber sales that surround it.</p>	<p>Both the Polallie-Cooper Hazardous Fuels Reduction and Horseshoe Thin projects are in the "plan-to-project" phase where they are being considered and developed through collaborative group discussions and preliminary field surveys. As of January 2013, neither project has a proposed action. Without a proposed action, the direct and indirect effects of these projects cannot be considered in the cumulative effects analysis for Red Hill Restoration because there is no way to determine whether or not the effects overlap in time and space. Further, given the stage of these projects, they may or may not be carried forward to formal NEPA planning. The Lava Restoration project has been added to the cumulative effects analysis for this project. The Proposed Action discussed in the scoping notice for Lava Restoration distributed in January 2013 was used for the analysis. Any changes to the Proposed Action based on public involvement or environmental analysis have not been incorporated into this EA. The cumulative effects of both projects will be fully analyzed and disclosed in the Lava Restoration Environmental Assessment.</p>

Comment Number	Comment	Response to Comment
2-2	<p>I am particularly concerned with the proposed Forest Health Units, which contain naturally regenerating native forests, older stands up to 100 years of age, and very steep slopes above the West Fork Hood River. These forests are already fully functioning ecosystems; the idea that such a forest needs active management in order to be healthy is short sighted. Insect and disease caused mortality is a natural component of the landscape and creates the snags and logs that wildlife depend upon. Please drop Forest Health Units 44, 79, and 116 and allow natural processes to prevail in these areas.</p>	<p>The Proposed Action (Section 2.2) includes three Thinning for Forest Health Improvement units (Unit 43, 44 and 50). The project does not include Units 79 or 116. Section 3.1.2, Vegetation Resources Existing Conditions discussing the current conditions by plant association, age class and stand structure for each stand. Individual stand exams were conducted for these units to inventory and analyze stand conditions. Stands 44 and 50 had trees that were found to be of larger diameter than neighboring plantations; however, other key components for a health stand were lacking as shown in Figure 2-2. (Note: Figure 2-2 was added in response to comments to show the on-the-ground conditions within these units.) Relative Densities in the two stands are between 65 to 78 trees per acre, resulting in slower growth. Also, both units lack needed stand structure and species diversity for the plant community. These stands are dominated by single story structure that is dominated by Douglas-fir. Both stands also lack conifer regeneration in the understory, which is dominated by vine maple. The Forest Service has past activity records (for both human and natural disturbances) for this area going back to the 1900's. Unit 43 was a younger stand that was likely impacted by regeneration harvest in the 1950's, but not actually harvested, there was evidence of past fire activities (fire scars and soot). Similar to its neighboring stands, it lacks growth, stand structure, and species diversity due to dense growing conditions.</p>
8-1	<p>Please drop Forest Health Units 44, 79, and 116 and allow natural processes to prevail in these areas.</p>	<p>See response to Comment 2-2.</p>

Comment Number	Comment	Response to Comment
11-1	<p><i>How will stands develop if they are left unthinned?</i> We are not certain how stands will develop if they are left unthinned. Because so much of the landscape remains in a younger condition (under 80 years), we still have little empirical data on the development of unthinned stands. Often, the decision to thin or not thin a stand is a decision based on operational logistics, economics, and expectations of improving ecological conditions of the system. Bark would argue that with units 21 and 26 progressing in a way that seems more aligned with natural succession –with understory initiation, suppression mortality, and shade tolerant tree growth commencing – these stands may offer us such an opportunity.</p>	<p>Section 3.1.3, Vegetation Resources Effects Analysis discusses the No Action Alternative. The section states: "In the long-term, the stand structure and composition would be dominated by Douglas-fir in the overstory, and the understory would remain under-developed with low occurrences of ecologically important tree and shrub species. The stand structure would remain in a single story dominant stem exclusion type stand (Refer to Table 3-7 and Figure 3-2). Young stands would continue to grow in densely stocked conditions with little regeneration. Densely stocked stands would continue to have large amounts of small patches with increasing crown closure with little species diversity and structural diversity." Individual stand exams were also conducted for Units 21 and 26 to inventory and analyze stand conditions. While both stands had trees with a quadratic mean diameter (QMD) larger than neighboring plantations, other key components for a health stand were lacking. Growth has slowed in both stands and they both lack needed stand structure and species diversity for that plant community.</p>
11-2	<p><i>How do treatments interact with the natural processes of the forest system?</i> It is not clear how restoration treatments may interact with or change disturbance regimes or alter hydrologic regimes. For example, it is possible that thinned trees may become wind-firm and reduce the amount of windthrow patches in the future stand. Alternatively, thinning could encourage increases in forest pathogens (e.g., Annossus root rot in western hemlock) that may prevent the stand from reaching a late-seral state. In addition, thinning can alter wildlife behavior (e.g., increase bear damage, alter ungulate browse). These may have unanticipated impacts on stand development and should be considered from the outset.</p>	<p>Chapter 3 provides analysis and discussion for each resource area on how the treatments interact with the natural processes that are present within the forest system. Using this analysis, each resource area discusses how the forest system is anticipated to respond to these treatments in the future based on field surveys, analysis and research. Disturbance regimes and forest pathogens are discussed in Section 3.1, Vegetation Resources; hydrologic regimes are discussed in Section 3.5, Water Quality; and, wildlife behavior is discussed in Section 3.8, Wildlife.</p>

Comment Number	Comment	Response to Comment
11-3	<p><i>If a young stand is treated, what type of treatment should be used?</i> Knowledge on the impacts of variable density thinning and the inclusion of skips and gaps, including size and spatial arrangement, is still unknown. Results from most studies that have investigated these are still in early stages of development, so long-term trends remain clouded. The tradeoffs of one entry versus multiple entries are also unclear. Many believe that multiple entries may be necessary to achieve late-successional habitat, especially where western hemlock is prevalent. However, the repeated disturbance from tree felling and harvesting equipment on other elements of stand structure and composition are not known. (Davis, 2008). Bark echoes these uncertainties about thinning and requests that the Forest Service engage with this scientific uncertainty rather than making unsupported, sweeping conclusions about the unequivocal benefits of thinning.</p>	<p>Overall, the focus would be on leaving the most vigorous, healthiest trees, and favoring minor species in variable density thinning. Thinning from below must retain some young trees of desired species if stands are to retain a healthy age structure. (Perry et al. 2004). Overall, the average stand diameters would be maintained or increased (Lindh and Muir 2004). Forest Vegetation Simulator (FVS) modeling was used to develop the proposed treatments spacing (See Section 3.1.1 for more details on model). FVS demonstrates growth results of proposed thinning and at what density the stands could be thinned in order to maintain needed canopy cover while still releasing retention trees to improve health and vigor. Density estimates are based on a combination of research, management direction, modeling, and past experience. Davis (2008) was reviewed as part of this project, but was not found to be applicable since it primarily focuses on pre-commercial thinning of very young stands (25 years old or less).</p>
11-4	<p>Bark . . . requests that the Forest Service engage with these questions and cautions to develop a more reasoned and scientifically supported restoration-based alternative for inclusion in the Environmental Assessment.</p>	<p>The Forest Service believes that the Proposed Action is scientifically and restoration based as presented in the EA. The EA discusses each of the three questions as recommended by Bark. See response to Comments 11-1, 11-2 and 11-3. Additionally, an alternative was developed in response to scoping comments submitted by both Bark and Oregon Wild. In order to address the decadence (dead trees, down logs, large woody debris, and trees with disease) issue, a Higher Retention Density within Riparian Reserves alternative was developed and eliminated from detailed study (Section 2.5). This alternative was considered that would retain higher tree densities within riparian reserves and Deer/Elk Winter Range (B-10 Land Use Allocation). The intent of this alternative would be to maintain down wood and snags within Riparian Reserves to meet Forest Plan standards (DW-215, FW-219, B10-014) and also achieve canopy cover of 70 percent within 10 years of treatment within B10-Deer/Elk Winter Range, while still meeting the purpose and need for action (see Section 1.3). A preliminary analysis of this alternative indicated that it would not be substantially different than the Proposed Action.</p>

Comment Number	Comment	Response to Comment
11-5	<p>After considerable discussion in the Stew Crew, it recommended that plantations be thinned using “Variable density thin from below with skips and gaps up to two acres”. PA at 1-15. While it lists this recommendation in the PA, the Forest Service chose to ignore it, and proposes to use variable density thinning with gaps from one to five acres in size. PA at 1-14. It is unclear that a five acre clearcut is a “gap”, and this is something the Stew Crew explicitly declined to endorse. The PA never explains why the Forest Service deviates from the Stew Crew’s recommendation, nor why such large gaps are necessary.</p>	<p>The Stew Crew recommendations (Appendix 1) are considered by the Responsible Official when developing a project, along with the environmental analysis, field survey results, research, management direction and other public involvement (i.e., scoping). The gaps for this project would vary from one to five acres in size based on the conditions within each unit (as described in Section 2.2.2). Gaps are intended to create openings to support regeneration of shade intolerant species and more rot resistant species while also providing structural diversity. Gaps would be placed in units with plantation thinning and thinning for forest health improvement prescriptions and gap locations would be focused where openings already exist, in frost and wind throw pockets, and in root rot pockets. The Forest Plan limits gap openings to 2-acres (FW-323) for uneven-age management. The limitation for even age management is much greater (FW-349 and FW-350). All of the proposed units are considered even age management, since they are existing plantations. As shown in Table 2-3, the project includes 59 gaps (138 acres) within 32 units. Only 5 units have gaps larger than 2-acres in size (recommended size). The larger gaps are needed to promote the regeneration of shade intolerant species (e.g., western white pine or larch) that are native to these stands.</p>
11-6	<p>Bark suggests that there is little to no need for additional early seral habitat in the project area, as 35% of the watershed is in private hands, and much of this is clearcut, as well as the large clear cut utility corridor (Big Eddy) running through the project area.</p>	<p>The gaps are not designed to create early seral habitat. Gaps are intended to create openings to support regeneration of shade intolerant species and more rot resistant species while also providing structural diversity. Gaps would be focused where openings already exist, in frost and wind throw pockets, and in root rot pockets. Section 3.8, Wildlife analyzes the effects of gaps on wildlife species.</p>
11-7	<p>As another example as to why these 5 acre gaps are unneeded, take unit 44. Table 2-3 in the PA shows that 3 gaps totaling 10 acres would be placed within unit 44. Yet when groundtruthers looked at the unit on the ground we found numerous openings already naturally occurring within the unit. As pictured to the left this opening in the northwest corner of unit 44 was approximately an acre in size and already achieves the goals of new gap creation. It furthers show that these stands have the natural ability to create the complexity that this project purports to achieve.</p>	<p>Stand evaluations showed most of the naturally occurring opening have not stayed open long enough for the establishment of shade intolerant and rot-resistant species. In most cases, these opening have already started to close. See response to Comment 11-5 for further discussion on proposed gap locations</p>

Comment Number	Comment	Response to Comment
11-8	In its summary of the results from the Stew Crew’s review of the Red Hill Timber Sale, the PA failed to include that “There was no agreement on a recommendation [for Forest Health Treatment] due to the lack of documented need for forest management in the units.” The absence of agreement is as valuable as the presence of agreement in moving forward with a project . . .	Section 1.6.1, Collaboration has been updated to include the language from the Stew Crew’s recommendations on Forest Health Treatment, as recommended.
11-9	. . . and the Forest Service should have listened to the silence of the Stew Crew and not included the Forest Health Treatment units in the Red Hill Timber Sale.	The Stew Crew recommendations (Appendix 1) are considered by the Responsible Official when developing a project, along with the environmental analysis, field survey results, research, management direction and other public involvement (i.e., scoping). As stated in the recommendations from the Stew Crew, "There was no agreement on a recommendation due to the lack of documented need for forest management in the units." Some members of the Stew Crew supported the Forest Health Treatment units, while others did not.
11-10	Bark has consistently challenged the stated reasons for the Forest Health logging. Our extensive surveys on the ground and from our understanding of forest ecology, the reasons are simply inaccurate. One reason is that the forests are in poor health because they are dense; and the other reason is that there are occurrences of insects and disease. PA at 2-1.	See response to Comment 2-2.
11-11	In unit 44, we even observed snags of sufficient number and size to provide suitable habitat for pileated woodpecker. This contrasts with the conclusion in the PA that none of the units contain sufficient numbers of large trees or snags to provide potential habitat for the pileated woodpecker. PA at 3-147. Bark requests that the Forest Service survey for pileated woodpecker in units 44 & 50 or, for this and so many other reasons that these comments will raise, simply remove these units from the project.	Pileated woodpeckers are a management indicator species. As discussed in Section 3.8.4, "The National Forest Management Act requires the Forest Service to manage wildlife habitat to “maintain viable populations of existing native and desired non-native vertebrate species in the planning area.” The primary assumption of this process is that indicator species represent the habitat needs of other species because they have similar habitat requirements." Field visits to Unit 44 were conducted to determine the habitat needs as required by the Forest Plan. The field visit was the basis for the effects analysis discussed in Section 3.8.4.3. The analysis concluded: "Unit 44 is approximately 99 years old, but none of the units contain sufficient numbers of large trees or snags to provide potential habitat for the pileated woodpecker."
11-12	As best as Bark groundtruthers could tell, units 44 & 50 are naturally moving towards achieving the desired stand characteristics, and have no noticeable major outbreaks of insects or disease. Logging these units would retard the natural functions in a variety of ways.	See response to Comment 2-2.

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11-13	Where are the helicopter landings located? What is their circumference?	Section 2.2.5, Landings has been added to the EA. This section provides a description of the landings, including an estimate of the acres and number of snags impacted. Approximately 8 helicopter landings and 75 skyline and ground-based landings are needed for this project. Every effort would be made to minimize the acres of disturbance associated with landings during lay-out and logging implementation. Based on the estimated acres of disturbance associated with landings (15 to 30 acres of disturbance) and number of snags within the plantations, it is estimated that approximately 2 snags per acre would be removed to meet the current Occupational Safety and Health Administration (OSHA) standards for clearing limits around landings. As a result, the maximum number of snags to be removed to meet OSHA standards is 60 snags. See Table 2-4 for full disclosure on the number of snags impacted by landings. The environmental consequences associated with landings are fully disclosed in Chapter 3, including Section 3.8, Wildlife.
11-14	. . . the PA does not provide any number or estimate of how many snags will be lost, or acknowledge that most of the trees that would have become new snags will be logged – leaving fewer, healthier trees that will not die for decades. We should look at questions like: In a landscape that is already denuded of snags, what would be the impact on snag dependent species during the time lag when there are even fewer snags in the forest than there are now?	Section 3.8, Wildlife provides an analysis of snags and downed wood within the project area, including the loss of future snags. This section also analyzes the impacts on snag dependent species of implementing the project, including the resulting snag levels.
11-15	. . . future snags will be bigger, thus provide better for habitat needs. From the PA table 3-33, it appears that in 100 years, under the no action alternative, there will be twice as many large snags, and that the QMD of thinned trees will be only two inches greater. Two inches is not an impressive surge of growth, nor does it seem to make that much different in habitat quality. PA at 3-94. This seems especially so when we are considering decades of having a reduced number of snags in the planning area.	Under the No Action alternative, there would be twice as many snags due to the existing densities levels. There would be no green tree removal under the No Action alternative, which contributes to modeled predictions of the number of snags. Snags would not be actively removed from stands under the Proposed Action; the only snags that would be dropped are those that pose a health and safety risk. See response to Comment 11-13 for additional information on the snags to be removed for health and safety. . The environmental consequences associated with landings are fully disclosed in Chapter 3, including Section 3.8, Wildlife.

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11-16	<p>. . . It is not at all clear that the no-action alternative would not also meet the first three facets of the purpose and need: 1) to increase health and growth of stands; 2) create greater variability of vertical and horizontal stand structure; and 3) maintain or enhance aquatic habitat and riparian conditions by improving forest health. PA at 1-4.</p>	<p>The full language of the first and second facet of the Purpose and Need for Action (Section 1.3) state: "Increase health and vigor, and enhance growth by releasing trees through a variable density thinning from below treatment to increase diameter and height growth of selected stands;" and, "Improve structural and species diversity within selected stands by reducing competition induced tree growth suppression and mortality, and by releasing leave trees through a variable density thinning from below to increase diameter and height growth." These could not be accomplished through the No Action Alternative because the trees would not be released. The full language of the third facet of the Purpose and Need states: "Maintain or enhance aquatic habitat and riparian conditions by improving forest ecosystem health of selected stands within riparian corridors and by decommissioning, closing and improving roads." This could not be fully met with the No Action Alternative because none of the road treatments would be implemented. Parts of the Purpose and Need for action may be addressed over time with no action as analyzed in the Existing Condition sections of Chapter 3, but the overall No Action Alternative would not be able to meet the overall purpose of the project nor the underlying needs for action.</p>

Comment Number	Comment	Response to Comment
11-17	<p>The Forest Service does a strange thing in its comparisons of the action and no action alternative which obscures this point: it analyzes the action alternative as if time exists, but the no action alternative as if time doesn't. For example, the PA finds that under the no-action alternative forests would "continue to remain uniformly dense and overstocked" PA at 2-1. This fails to recognize that the forest changes over time, even without human interference. The "no action" forest would experience increased tree mortality, which would open gaps, create more snags, add structural diversity, lead to the introduction of other species, etc., all of which achieve the purpose and need.</p>	<p>The description of the No Action Alternative (Section 2.1) does continue on to state: "In the long-term, the stand structure and composition would be dominated by Douglas-fir and in the overstory, and the understory would remain under-developed with low occurrences of ecologically important tree and shrub species. The stand structure would remain in a single story dominated stem exclusion type stand. Young stands would continue to grow in densely stocked conditions with little regeneration. Densely stocked stands would continue to have large amounts of small patches of increasing crown closure and little species and structural diversity." Further, the description states: "Over the next 50 years there would be more trees dying and then falling in Riparian Reserves as the stands decay and fall apart. As such, there would be an increase in the amount of down wood, but this wood would generally be smaller in diameter and thus would decay faster both in and out of stream channels." Lastly, the description of the No Action Alternative references the existing condition analysis contained in Section 3.1, Vegetation Management which provides detailed discussion and quantitative analysis on how the stands would change over time if no action was taken.</p>
11-18	<p>By focusing almost solely on tree width and density, the analysis of "No action" in Section 3 never discloses the positive outcomes from no action, such as increased snag density in the short-term, increased down woody debris, less soil compaction, less erosion and sediment loss. Another way to approach this section would be to acknowledge all the potential ecosystem damage from commercial logging operations and road building that come from the action alternative, and analyze how much better the forest would be without having those occur. Please try incorporating more of that information into the EA.</p>	<p>Each of the resource areas of Chapter 3 includes a full analysis of the No Action Alternative, including any positive benefits of not taking action. Snags and downed woody debris are discussed in Section 3.8; soil compaction is discussed in Section 3.4, Soil Productivity; erosion and sediment lost is discussed in Sections 3.4 through 3.6 (Soil Productivity, Water Quality and Fisheries & Aquatic Fauna). The description and analysis of the No Action Alternative fully complies with the requirements of NEPA.</p>
11-19	<p>Much of the analysis acts as if all of the stands are in the same pre-existing condition. This is not accurate.</p>	<p>The Existing Conditions section of Section 3.1, Vegetation Resources discussing the current conditions by plant association, age class and stand structure for each stand. This section describes the differences in each of these characteristics and explains how the treatment units vary.</p>

Comment Number	Comment	Response to Comment
11-20	Units 26, 44 and 50 are all significantly older forests, which have much more structural complexity and diverse understory. Of all the units proposed for treatment, the following three units have marginally suitable mid-elevation late-successional forest habitat for R6 Sensitive species and Survey and Manage species: Units 26 and 50 are both approximately 75 years old with a current canopy closure density of approximately 70 percent. Unit 44 is the oldest unit proposed for treatment; stand age is approximately 99 years old and current canopy closure is approximately 70 percent density. PA at 3-160. These are the units that Bark requests be removed from the project, as these forests are all healthy and moving towards the desired conditions, and logging could actually keep them from meeting the purpose and need.	See response to Comment 2-2. Overall stand age was calculated by averaging all the ages of the two most dominated trees within each stand exam plot. The Dictionary of Forestry defines stand age as "the mean age of the dominant and codominant trees in an even-aged stand." Stand exam plots meet all statistical error as directed by Forest Service Handbook (FSH) 2470.17
11-21	. . . Given all this information, Bark does not understand how the Forest Service concluded that the Proposed Action is expected to have a Beneficial Impact/Effect on the Survey & Manage fungi. PA at 3-169.	Section 3.9, Botany continues on to provide a rationale for the effects determination of Beneficial Impact/Effect. The rationale states: "Survey and Manage is a mitigation measure designed to provide a reasonable assurance of species persistence within the Northwest Forest Plan area. Activities proposed under the Proposed Action, in Unit 44, are not expected to affect the long-term persistence or viability of Survey and Manage fungal species and R6 Sensitive fungi on the Mt. Hood National Forest or throughout their range because the proposed silvicultural treatment of Unit 44 is intended to encourage development of the stand into a late-seral forested condition which would be more favorable for late-successional forest associated species; and, essential habitat is expected to remain in protected in similar mid-upper elevation late-successional/old-growth forest reserve areas around Mt. Hood, the Mt. Hood National Forest, and throughout the range of the Northwest Forest Plan where application of Survey and Manage Standards and Guidelines are intended to provide for persistence of Survey and Manage botanical species."
11-22	Four words: Lava, Polallie Cooper, Horseshoe. Are these not reasonably foreseeable projects with cumulative impacts? How is it that they were left out of the analysis altogether? Please include the potential environmental effects of these sales in the EA. There is no way we can adequately analyze what is happening on Mt Hood without looking at the cumulative effects of all these projects	See response to Comment 2-1.

Comment Number	Comment	Response to Comment
11-23	The goal of “growing bigger trees faster,” which seems to be the main justification for logging in the Riparian Reserves, is not necessary to attain any of the ACS objectives.	Section 3.7, Aquatic Conservation Strategy (ACS) provides any analysis of how both the No Action and Proposed Action alternatives would or would not achieve the ACS objectives. This analysis shows that the only ACS objective not being met by the existing conditions is large woody debris. The large woody debris objective would be restored through the implementation of the Proposed Action. Also, the physical barriers, pool frequency, channel conditions/dynamics, drainage network and watershed conditions would be restored through the implementation of the Proposed Action.
11-24	Additionally, there are many possibilities for ecological damage from commercial logging and yarding in Riparian Reserves. Logging, yarding, landings, and roads in riparian zones degrade aquatic environments by lessening the amount of large wood in streams, elevating water temperature, altering near-stream hydrology, and increasing sedimentation. (Karr et al. 2004).	The reference provided in the comment, Karr et al 2004, pertains to salvage logging in wildland fire areas. These conditions are much different than treatment areas within the Red Hill Restoration planning area. Wildland fire areas are typically moderately to highly disturbed and have conditions, such as hydrophobic soils and thick ash accumulations that are not found in regular, unburned forests. These changed conditions resulting from wildfires (hydrophobic soils and ash) can result in much different responses to disturbance than unburned forests. Chapter 3 of the EA and supporting documents in the Project Record, describe effects to the aquatic, riparian and terrestrial environment resulting from implementation of this project.
11-25	Bark requests that the Forest Service remove all commercial logging from riparian reserves, as it is well-documented to lead to adverse watershed impacts and is not necessary to attain ACSOs.	See response to Comments 11-23 and 11-24.
11-26	The PA mentions that there will be up to four miles of temporary roads, but that the location may change. This makes it very difficult to comment on them. One of Bark’s main concerns about the new roads are potential stream crossings. The PA does not disclose if, or where, the new roads will cross streams, what the conditions of those streams currently are and how the crossing will impact water quality.	Figure 2-1 is a map of temporary roads. Based on the project design, there are no stream crossings and none of the temporary roads are hydrologically connected. The Proposed Action states: "The exact locations of temporary roads may change during the layout phase of this project." The intent is to have the temporary roads located as depicted in the map; however, they may need to be slightly adjusted during the layout phase. Any changes would have to meet the design criteria stated in Section 2.2.4, Temporary Roads and Section 2.3, Project Design Criteria, and would have to be covered by the analysis contained in Chapter 3 of the EA. Any change to the Proposed Action following a signed Decision Notice would have to follow the change condition requirements in NEPA and be approved by the Responsible Official.

Comment Number	Comment	Response to Comment
11-27	<p>The PA also does not include any quantitative assessment of the Red Hill Timber Sale’s effects on erosion from road (re)construction compared to leaving roads in their current recovering state. Road construction is by far the greatest contributor of sediment to aquatic habitats of any management activity (Meehan 1991, Robichaud et al. 2010) . . . Unpaved roads and stream crossings are the major source of erosion from forest lands contributing up to 90% of the total sediment production from forestry operations.</p>	<p>Current research, demonstrates that the greatest source of sediment delivery to streams is mass soil movement (wasting), rather than road construction. While the predominant amount of this wasting is road related, implementing the PDC would avoid sediment delivery due to mass wasting and substantially minimize sediment delivery as a result of surface runoff. Appropriate PDC/BMP would be employed to minimize sedimentation risk, including using existing road templates. Increased traffic frequency does lead to increased road surface erosion, the PDC make every practicable effort to control and capture this erosion. Section 2.3 includes a full list of the required PDC, and Appendix 2, Best Management Practices for Water Quality Protection. The effects and environmental consequences resulting road treatments and use have been disclosed in Section 3.2, Transportation Resources; Section 3.4, Soil Productivity; Section 3.5, Water Quality and, Section 3.6, Aquatic Resources.</p>
11-28	<p>Although it is not disclosed in the PA, in addition to construction and reconstruction impacts, elevated road use for log haul also greatly elevates erosion and sediment delivery on unpaved roads.</p>	<p>See response to Comment 11-29.</p>

Comment Number	Comment	Response to Comment
11-29	<p>As with constructed and reconstructed roads, the highly elevated sediment production from roads used for haul is delivered to streams at stream crossings and other points of connectivity between streams and roads, such as gullies and relief drainage features that dump elevated road runoff laden with sediment to areas in relatively close proximity (e.g., less than 300 feet) to streams. This impact of log hauling at stream crossings, alone, will greatly elevate sediment delivery to the stream system. Please analyze this more fully in the EA.</p>	<p>Section 3.6.3, Fisheries & Aquatic Fauna Effects Analysis outlines haul routes and aspects of these routes that have an influence on potential sediment delivery such as road surface type, number of stream crossings, and haul season (Table 3-34). Out of 37.3 miles of system road there are 52 stream crossings; 33 of which are located on paved roads where fine sediment input to streams would be negligible due to road surfacing. The remaining 19 crossings are over intermittent streams. Although small amounts of fine sediment are expected to enter streams at road crossings, the amount is expected to be immeasurable against background levels due to road maintenance, application of erosion control measures and exclusion of some roads/road sections from haul during winter (only four streams crossed on potential winter haul routes). Hauling during dry periods greatly minimizes erosion and potential sedimentation. The Fisheries Biological Assessment (BA) has further detail regarding the potential effects of log hauling and sediment introduction to streams. The BA is available in the project record. Fine sediment entry into streams resulting from hauling would be minimal due to few native or aggregate surface roads available for wet weather hauling, road maintenance occurring before, and as needed during hauling, drainage relief culverts not connected to any stream channels, and short sections of road that drain directly into streams (the section between stream and closest drainage culverts). As a result, the amount of fine sediment entering streams as a result of log and rock hauling would not be zero, but it would be immeasurable against natural background levels.</p>

Comment Number	Comment	Response to Comment
11-30	If however you proceed with the mapped out roads on 2-10 of the PA we would strongly encourage the removal of the temporary road leading into unit 1. This road runs directly parallel to the Key Site Riparian area of the West Fork.	The temporary road leading into Unit 1 is an old temporary road from a previous timber sale. As explained in Section 2.2.4, to minimize impacts to the environment and natural resources, pre-existing temporary road alignments and alignments of previously decommissioned system roads are utilized wherever practicable. There are cases where it is not feasible or undesirable to use the same alignments or landings. In some places, in order to protect residual trees, soil, and water, new temporary roads are proposed to access landings where existing system roads and old alignments are not adequate for accessing strategic locations on the ground. For this project, all stream crossings were eliminated and none of the temporary roads are hydrologically connected. For this temporary road, the site specific analysis demonstrated that utilizing the existing temporary road caused limited environmental impacts. Section 3.5, Water Quality and Section 3.6, Fisheries & Aquatic Fauna analyze the impacts of temporary road use with A9-Key Site Riparian lands. This project is consistent with all the Standards and Guidelines in the Forest Plan for this land use allocation.

Comment Number	Comment	Response to Comment
11-31	<p>The PA acknowledges that riparian conditions and pathways for recruitment are recovering in much of the action area; however, short-term wood recruitment is limited because most trees are not yet of an age and/or size to fall in great numbers on their own. PA at 3-88. Bark believes this to be true, but is entirely confused as to why the solution to this problem is to take more trees out of the ecosystem before they reach the age/size to fall on their own. Removing the trees that are most likely to die naturally necessarily decreases the amount of trees in the riparian reserve that would become in-stream coarse woody debris.</p>	<p>Trees located within riparian stands in proposed units have essentially stopped growing due to overcrowding - there are too many trees for the available water and nutrients. To stimulate tree growth, the Proposed Action is to remove trees so that the remaining trees have more space and can absorb more nutrients/water to stimulate growth. This would reduce the number of trees in the thinned portions of Riparian Reserves and would also reduce large wood recruitment to adjacent streams as outlined in Section 3.6.3, Fisheries & Aquatic Fauna Effects Analysis in the EA. This reduction in large wood recruitment, however, would be minimal at both the site and especially action area scales for the following reasons: (1) most wood recruitment to streams comes from the zone within 18 meters of the stream (about 60 feet); (2) not all trees that fall would fall into a stream; (3) most would not given random fall direction and the fact that most of these streams are small and incised so the trees would be suspended above the channel; (4) the reduction in available trees would only last for about 40 years based on FVS modeling; and, (5) the amount of riparian area treated within one site potential tree height (130 feet) of streams is quite small (only 3% of Riparian Reserves within the action area).</p>
11-32	<p>While the PA suggests that even though there would be a longer time delay for riparian woody debris, that because the future trees will be bigger they will be better. Again, the increased growth rate seems far from significant – definitely not enough to make a huge difference in time line for decay.</p>	<p>All environmental factors being equal a larger diameter tree would take longer to decay than a smaller diameter tree. The analysis was not intended to determine the significance of that increased decay period. Increased growth is only one of several benefits expected from Riparian Reserve thinning.</p>
11-33	<p>The PA states that perennial streams, wetlands, lakes and ponds would all have a minimum of 60-foot no cut buffer, and intermittent streams would have a minimum of 30-foot no cut buffers. PA at 2-13. Bark is perplexed as to why the no-cut buffers are less than the width that NMFS has stated is essential to prevent take of ESA listed species.</p>	<p>See response to Comment 11-34 and Comment 11-35. All required consultation has been completed for this project. The Forest Service, National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (FWS) all agreed with the effects determination of may affect, but not likely to adversely affect (NLAA) for ESA-listed fish species. No take was issued for this project.</p>

Comment Number	Comment	Response to Comment
11-34	<p>On Nov. 6, 2009, NFMS sent the Forest Service and BLM a letter titled “Nonconcurrency and Notice of Biological Opinion in Preparation for the Re-initiation of Informal Consultation on the 2007-2009 Low-Risk Thinning Timber Sales Programmatic Action for the Lower Columbia/Willamette Recovery Domain” (“Letter of Nonconcurrency”). The Letter of Nonconcurrency said, in sum, that based on new scientific information and analysis of data and scientific literature not considered in its prior informal consultation, NMFS concluded that the existing no-cut buffers and level of tree retention for perennial stream reaches located upstream of ESA-listed species of salmon and steelhead would cause reductions in stream shade and increases in water temperature that are reasonably certain to adversely affect these species and their critical habitat.</p>	<p>NMFS letter was specific to the 2007-2009 Low-Risk Thinning Timber Sales Programmatic Action for the Lower Columbia/Willamette Recovery Domain Biological Opinion. The Forest Service has completed informal consultation with NMFS and FWS for Red Hill Restoration. Both the management and regulatory agencies will incorporate the new scientific information, analysis of data, and scientific literature referenced in the letter of nonconcurrency. The impacts to stream shade and water temperature on the Endangered Species Act (ESA)-listed species and their critical habitat is analyzed in Section 3.6, Fisheries & Aquatic Fauna. Additional analysis is available in the Biological Evaluation (BE) and BA prepared by the Forest Service and Letters of Concurrence (LOCs) prepared by NMFS and FWS for this project. The BE and BA are available in the project record for this project. The LOCs are available on the project website at: http://www.fs.fed.us/nepa/fs-usda-pop.php/?project=35969.</p>
11-35	<p>Bark sued the Forest Service and BLM to force the agencies to expand their no-cut buffers on existing sales to 100 feet on either side of a perennial stream. The Forest Service and BLM settled this suit earlier this year and did expand boundaries on all units within 1,000 feet of ESA-listed fish habitat, including in the nearby Lake Branch timber sales. Bark assumed that future sales would incorporate this information and include adequate buffers. Could you please explain why these smaller no-cut buffers provide ESA-listed fish adequate protection?</p>	<p>The analysis within Section 3.6, Fisheries & Aquatic Fauna as well as the BE, BA and LOCs prepared for this project all provide the analysis and rationale for the effects determination of may affect, but not likely to adversely affect (NLAA) for ESA-listed fish species present within the project area. Potential effects center on disturbance, increased sedimentation, and reductions in large wood potential and in-stream levels.</p>

Comment Number	Comment	Response to Comment
11-36	<p>According to the Preliminary Decision Memo for Forest Wide Restoration, September 2012 it identifies two separate projects along Marco Creek to assist ESA listed fish that reside in Marco Creek. The West Fork Watershed Analysis 4-21 notes that Marco Creek is already marked as a concern stream regarding the ARP. Further, Marco Creek is already contending with the permanent clearcut of Big Eddy which cuts right through it, leaving absolutely no riparian buffer. This would all lead Bark to conclude that we should not be logging unit 21, which has 70% slopes above Marco Creek, and the healthiest intact ecosystem of all the plantation units.</p>	<p>The cumulative effects analysis for all resources has been updated to include the restoration projects from the Forestwide Restoration environmental analysis that overlap in time and space with this project. These projects are: FSR 1600 Marco Creek Aquatic Organism Passage (AOP), FSR 1800 Elk Creek AOP, Longview Timber Spur Road AOP, FSR 1800 Non-Fish Culvert Replacements, FSR 1800 McGee Creek Culvert Replacement, Bonneville Power Administration Road Storm proofing, West Fork Hood River "Marco" Large Wood Restoration: Phase 2, West Fork Hood River Large Woody Debris Addition - Red Hill/Ladd Area, and Red Hill Creek Large Wood Addition. There are no ESA-listed fish species that neither reside in Marco Creek nor is it designated critical habitat for any fish species. An Aggregate Recovery Percentage (ARP) calculation was completed for this project and the sub-watershed in compliance with Forest Plan Standards and Guidelines for watershed impact area. Slope in Unit 21 ranges from 20 to 40 percent although there may be small areas with steeper slopes directly adjacent to Marco Creek. The no-harvest buffer in this unit is 120 feet along each side of Marco Creek partially for this reason.</p>
11-37	<p>Another item worth mentioning is the Road 1600720 that leads into unit 5. This roadway crosses the South Fork Marco Creek at two separate locations as it switchbacks into unit 5. Groundtruthers found that there were trees growing directly in the road template. Perhaps more troubling were the rockslides noted in the vicinity of the South Fork. It would be a catastrophe to have a roadway improvement trigger an event that further complicates the enhancement of Marco Creek. This is especially so since this road section is slated to be decommissioned after the project is completed. That is, if funding is available.</p>	<p>The Proposed Action (Section 2.2.8) states that Road 1600720 (0.7 miles) would require clearing to remove the trees that are growing directly in the road template. The impacts of the stream crossings at these locations is analyzed in Section 3.6. Unit 5 and Road 1600720 were not found to have unstable slopes as discussed in Section 3.3. The Proposed Action for this road is passive decommissioning following timber haul, so minimal funding is required for implementation.</p>

Comment Number	Comment	Response to Comment
11-38	<p>Only one stand proposed for thinning treatment (Unit 44) is over 80 years old and thus was surveyed for potential aquatic survey and manage mollusk habitat. PA at 3-83. Bark believes that the Forest Service should also survey the south portion of unit 26, as our groundtruthers found it to be at least 100 years of age. It seems that the Forest Service averaged the ages of the stand in the unit to reach the 75 year stand age (as the northern portion of the unit is much younger). Currently, several environmental groups in Oregon are suing the BLM over the use of stand age averages in order to avoid surveying in stands that have components over 80 years. Bark requests that the Forest Service correct this mistake now, and conduct survey & manage surveys in the southern half of unit 26.</p>	<p>This project complies with the court's survey and manage direction in <u>Northwest Ecosystem Alliance v. Rey and Conservation Northwest v. Sherman</u> and/or there would be no expected impact to aquatic systems from created openings so surveys are not required. As such, this project is consistent with the survey requirements in the 2001 Record of Decision and Stands and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines.</p>
11-39	<p>According to the WFWA 4-11 debris torrents are common on slopes above 50% in the West Fork watershed. The Forest Health Units 44 and 50 are located on steep slopes, up to 70%. Further unit 50 has 6 streams within the unit, a road that dissects the unit, and is just a quarter-mile from the West Fork. The Hood River Interim Director noted on photos of unit 50 that there were avalanche chutes within the unit, and raised concerns about this causing a potential event in the unit. Unit 50, and for that matter unit 44, are also very close to the West Fork Hood River along a Key Riparian site and should be removed from further consideration.</p>	<p>Under the Proposed Action, thinning would occur in areas that are considered to be stable by a slope stability specialist (See Section 3.3). Sections of Unit 44 and 50 that were considered unstable were removed under the Proposed Action. The boundaries of Unit 50 were adjusted during the analysis phase in order to minimize any impacts to the streams. In addition to the boundary adjustment, it was noted at the site during a field trip with NMFS that the avalanche chutes were a result of snow and not mass wasting. All treatments are consistent with the Forest Plan Standards and Guidelines for A9-Key Site Riparian lands. See response to Comment 2-2 for more information on Units 44 and 50. See Section 3.5, Water Quality and Section 3.6, Fisheries & Aquatic Fauna for a full analysis of the impacts of treatments within these units on the aquatic resources.</p>
11-40	<p>Earlier this year, remote cameras on the NE side of Mt. Hood captured images of nocturnal red foxes, identified as the Sierra Nevada Red Fox, long thought to be extinct in the Mt. Hood region. Please include analysis of the potential impact of this sale to this rare fox, as the sale may overlap its range.</p>	<p>A remote camera on the NW side of Mt. Hood captured images of what may be a montane red fox. This is not a Survey and Manage Species, Management Indicator Species, or Sensitive Species, and is not federally listed as threatened or endangered. As such, an analysis of the impacts of the Proposed Action to this species is not required. The montane fox is currently being monitored through the Cascades Carnivore Project. It is a high elevation nocturnal species and its historic range likely falls outside of the Proposed Action Area.</p>

Comment Number	Comment	Response to Comment
11-41	<p>There is a spotted owl nest right by unit 44 which, at 99 years old, is the oldest unit in the project area and borders a 100 acre LSR. Edge effects have been documented to commonly penetrate 100 m into a forest stand. Even when edge is conservatively defined based on a 60 m zone, a high proportion of existing old-growth stands are largely edge habitat and would be subject to indirect effects of thinning of adjacent stands. (Carroll, et.al., 2009). Strong edge effects also subject remnant LSOG patches to increased propagule pressure from non-native species, making them more at risk for invasion by diseases (Hansen et al. 2000, Kaufmann and Jules 2006), as well as exotic flora that grow into the forest canopy or dominate understories. The Red Hill PA contained no analysis of the impact of increasing edge effects in the LSR through logging in unit 44.</p>	<p>Usually "edge" is defined as a clear-cut adjacent to an uncut stand. As such, an analysis of edge effects on Unit 44 is not appropriate. Carroll, et. al. (2009) was reviewed and no alternate definition of edge effects was discussed. The impacts of thinning in Unit 44 were fully analyzed in Section 3.8.2.3: "There is one home range that overlaps with 10 of the proposed treatment units. These units total 396 acres of dispersal habitat, 70 acres in the core area, and 326 acres in the home range. This home range is currently below the threshold of 40 percent suitable habitat, but is above the threshold of 50 percent suitable habitat within the core area. The proposed treatments would not reduce the amount of suitable habitat within either the core area or home range." Additionally, the impacts of the Proposed Action on invasive or non-native species is analyzed in Section 3.10.</p>
11-42	<p>If left unlogged, this unit has the best potential of all the units to become spotted owl nesting and roosting habitat. Plans to helicopter yard it will both reduce snags and disturb owls! This unit also borders a large tract of undisturbed forest to the west that contains suitable owl habitat. Again, there are so many reasons NOT to log unit 44 for forest health. Please remove it from the sale.</p>	<p>See response to Comment 11-41 and Comment 2-2.</p>
11-43	<p>The PA failed to acknowledge that thinning reduces flying squirrel populations and that they also decline in areas adjacent to thins, and failed to quantify what the effect of a decrease in its principle food source would mean for the spotted owl.</p>	<p>Spotted owl prey species, including flying squirrel, are associated with mature to late-successional forests. All of the thinning units in the Proposed Action are within spotted owl dispersal habitat which does not include late-successional forests. PA Section 3.8.2.3: "Because there would be no suitable habitat impacted by project activities and because dispersal habitat would be maintained at current levels, it is unlikely that the proposed harvest activities would impact the health or survival of any birds within or adjacent to the project area." Wilson (2010) found that most thinning is likely to suppress flying squirrel populations, but that the long-term benefits of variable-density thinning on squirrels are likely to be positive. Complex structure favorable to squirrels may be achieved sooner in stands that are thinned. The highest quality habitat for flying squirrels will not be impacted. This analysis will be included in the final Red Hill EA.</p>

Comment Number	Comment	Response to Comment
11-44	This section was confusing. It began by stating that the proposed project has a Moderate Risk of introducing or spreading noxious weeds. PA at 3-170. It ended by saying that There is a High Risk of introducing and/spreading noxious weeds directly and indirectly via machinery and equipment used during all ground disturbing activities proposed under the Proposed Action alternative. PA at 3-172. From visiting the project area and seeing the prevalence of invasive species in disturbed areas, Bark feels that the latter conclusion is much more accurate. So, working under the assumption that there is a high risk for spread of invasives, what does that mean?	The noxious weed risk assessment is high (not moderate). This error has been corrected in the EA. Implementation of the PDC specifically for prevention and control of noxious weeds (i.e., washing machinery before entering the Mt. Hood National Forest, and using only certified weed-free nursery stock, gravel, and mulch) would reduce the risk. Annual monitoring for early detection would allow for application of appropriate control measures to prevent future spread of noxious weeds in the analysis area.
11-45	Bark suggests that not logging units 26 and 21 would prevent the spread of invasives from the utility corridor upslope. St. John's Wort, Scotch Broom, Spotted knapweed, Oxeye Daisy, Bull Thistle, and Hairy Cat's Ear are all present in the corridor and all of these invasives are strongly associated with logging.	See response to Comment 11-44.
11-46	Bark strongly encourages the Forest Service to create better protocol to slow the spread of invasive plants, as the current ones are simply not working.	The R6 Final Environmental Impact Statement for the Invasive Plant Program, Preventing and Managing Invasive Plants (2005) and Site Specific Invasive Plant Treatments for Mt. Hood National Forest and Columbia River Gorge National Scenic Area in Oregon, including Forest Plan Amendment #16 (2008) provide the management direction for invasive plants on the Mt. Hood National Forest. Creating a protocol to slow the spread of invasive plants is outside the scope of this project.
11-47	Recent conversations with Forest Supervisor Chris Worth indicate that he is reviewing the Forest Service's approach to implementation and monitoring of the BMPs. As this is an ongoing process, and will likely result in some changes to the overall Forest Service approach to BMPs, Bark will not comment extensively on the BMPs in the PA stage of this project.	Section 2.6.3, Best Management Practices and Appendix 2 has been added to the EA and contains site-specific BMPs for this project, including information on implementation and monitoring.

Comment Number	Comment	Response to Comment
11-48	. . . the use of flexible terms like “may”, “generally”, and “should” do not belong in BMPs. This goes against their very purpose, and turns them into unenforceable suggested management practices. Please review and revise your BMPs to have enforceable, quantifiable standards.	The language for the BMPs included in Appendix 2 is taken directly from General Water Quality Best Management Practices, Pacific Northwest Region (November 1988) and The National Best Management Practices for Water Quality Management on National Forest System Lands - Volume 1: National Core BMP Technical Guide (April 2012). According to the USFS National Core BMP Technical Guide (April 2012) “Site-specific BMP prescriptions are developed based on the proposed activity, water quality objectives, soils, topography, geology, vegetation, climate, and other site-specific factors and are designed to avoid, minimize, or mitigate potential adverse impacts to soil, water quality, and riparian resources. State BMPs, regional Forest Service guidance, land management plan standards and guidelines, monitoring results, and professional judgment are all used to develop site-specific BMP prescriptions.”
11-49	Follow the Stew Crew’s recommendations and decrease gaps to no more than 2 acres	See response to Comment 11-5.
11-50	Remove the “Logging for Forest Health” units, and units 21 & 26 from the project	See response to Comments 2-2, 11-1 and 11-20.
11-51	Increase riparian no-cut buffers to at least 100 feet for perennial streams, and 50 feet for intermittent streams	See response to Comment 11-34 and 11-35.
11-52	Ensure quantifiable, enforceable BMPs	See response to Comment 11-47 and 11-48.
12-1	AFRC remains concerned about the complete decommissioning of roads. The Red Hill Project will place temporary roads on top of previously "decommissioned" roads, which is a case in point. Why are you spending the money to decommission roads then placing temporary roads on top of them at a later date? Permanently closing or decommissioning roads that will be needed at a later date is not prudent and other means of mitigating problems that those roads may be causing in the present and meeting objectives should be identified.	All of the roads within the project area were analyzed to determine if decommissioning or road closures were appropriate following the completion of the proposed vegetation treatments (see Section 2.2.7). The criteria used to determine if the road would be decommissioned, closed, upgraded or remain open included: public and administrative access; likelihood and timing of future timber/fuels treatment; level of aquatic risk; current road conditions; and, future road maintenance needs. As defined by the 2003 Roads Analysis Report, an aquatic risk rating was assigned to each road segment based on combining the values of individual aquatic risk factors. The individual risk factors are: riparian areas/floodplains; fish passage; landslide hazard; surface erosion hazard; hydrologic hazard; high risk stream crossings; stream crossing density; and, wetlands.

Comment Number	Comment	Response to Comment
12-2	<p>The Red Hill Restoration analysis area is estimated to be about 12,000 acres in the upper West Fork Hood River watershed. However, the actual acres to be treated in the Red Hill Restoration project are now about 1500 or 13 percent of the analysis area. Further, the Purpose of the project conveys a sense of urgency regarding the condition of the vegetation and habitat in the area and the need to move it toward a more desired condition. Given the extremely high costs of NEPA analysis it is imperative that as many acres as possible be treated in the project.</p>	<p>The proposed treatment areas were designed to address the forest ecosystem health issues based on the land use allocations and the overall purpose for this project (see Section 1.2). The proposed treatment areas were selected based on forest health needs and readiness for treatment. Some of the areas within the watershed are not within land use allocations that emphasize timber management or the acres do not need any treatment to improve forest health conditions on-the-ground. For example, the original project included an additional 3,000 acres of treatment to reduce hazardous fuels and to improve wildlife habitat. These acres were dropped because field surveys revealed that the treatments were not needed or were not practical at this time. In addition, approximately 200 acres were deferred to the Lava Restoration project in order to continue discussions with the collaborative group on huckleberry enhancements.</p>
12-3	<p>I am very discouraged to see that the actual treatment acreage has dropped since the scoping phase last spring.</p>	<p>From the Scoping (April 2012) to Notice & Comment (November 2012) period, the treatment acres in the Proposed Action dropped by 181 acres. Fifty-one acres originally were proposed for thinning. These acres were dropped based on the analysis conducted by the interdisciplinary team. For example, acres were dropped from Unit 50 because of unstable slopes. The majority of the acres dropped (127 acres) were logging system access acres which were no longer needed to implement the proposed thinning treatments. The remaining three acres were dropped from the sapling thinning.</p>
12-4	<p>The documents described the Red Hill project refer to both "thinning from below" and to variable density thinning (VDT) "which allows for flexibility to achieve overall treatment objectives" and "allows emphasis to be placed on leaving vigorous trees of all sizes without concern for fixed spacing". . . I suggest that you remove the language in your documents that refers to "thinning from below" as that gives the impression that the larger trees will always be left regardless.</p>	<p>Sections 1.3, 1.4 and 2.2.1 have been updated to avoid any confusion concerning the intent of the variable density treatments.</p>

Comment Number	Comment	Response to Comment
12-5	Objectives for enhancement of riparian areas, for creating of snags, and to increase large woody material in the future will be met in the thinning projects described as part of the Red Hill project. Since a significant amount of the analysis area will not receive treatment it is important that various groups that do not support forest management be included in monitoring of these areas in the future to enhance their understanding of the demonstrated positive effects of soundly implemented silvicultural treatments. Comparisons between treated and non-treated areas are important to help the general public understand the ramifications of various alternatives including no action.	The Hood River Collaborative Stewardship Crew will have the opportunity to monitor this project through third-party monitoring. The Forest Service has worked with collaborative groups in the past to set-up monitoring field trips and discussions comparing treatment vs. no treatment. The Forest Service would be willing to participate and help organize such monitoring in the future as well.
13-1	There are 3 units with "forest health" prescriptions that raise significant concerns. Units 44 and 50 in particular give us the most concern and should be dropped from this proposal.	See response to Comment 2-2.
13-2	It is important to view forest health from an ecological perspective instead of a tree-farming perspective. As such, insects, disease, mistletoe, and even competitive stress are natural processes that contribute to habitat diversity. When these agents of change cause mortality they create dead wood structure and reduce stress on the trees that remain alive. Overall, as a result of "forest health" issues, the stand has moved closer to old growth conditions and provides habitat for more diverse wildlife.	The intent of the proposed action is not to eradicate or eliminate natural processes (i.e. insect and disease presents), but rather to protect stands from epidemic levels of these natural disturbance agents. Moving stands towards natural conditions for specific plant communities does not remove natural disturbance agents, rather it allows stands to self-regulate these disturbances at more endemic levels.
13-3	Unit 44 was visited by the collaborative group and general consensus was that it was a pretty healthy looking stand with some mature trees. The level of disease in the area was within the levels of a healthy forest already. Logging in this stand would not improve stand health. Logging this unit would also degrade the Marco Creek roadless area as well as the Lost Lake Butte roadless area.	See response to Comment 2-1 and 2-2. None of the proposed treatments are within Inventoried Roadless Areas (IRAs), unroaded areas, or potential wilderness areas.
13-4	Unit 50 is so steep it has avalanche chutes. The stand has an elevation gain of 1,000 ft in the span of less than 1/3 mile distance. This unit is also full of riparian areas, steep riparian areas. This unit would log in the Lost Lake Butte roadless area.	See response to Comment 11-39. None of the proposed treatments are within Inventoried Roadless Areas (IRAs), unroaded areas, or potential wilderness areas.
13-5	The collaborative group was so unimpressed with the explanation for the need to log these units that they determined there wasn't sufficient justification for this logging.	See response to Comment 11-9.

Comment Number	Comment	Response to Comment
13-6	<p>. . . We recommend road 1340 be decommissioned instead of just closed as it would be a significant benefit to the area. It would help lower the road density of this area and improve wildlife movement between the Lost Lake area and the Marco Creek area. 1340 has a very high concentration of creek crossings that will benefit from having culverts pulled and as a result improved water quality.</p> <p>Decommissioning this "high maintenance" road would result in significant long term maintenance costs savings for the Forest Service and tax payers. Given the intensive logging and erosion on private lands in the West Fork Hood River watershed, the decommissioning of road 1340 will help offset this damage and improve conditions on these nearby public lands.</p>	<p>See response to Comment 12-1. Also, the existing conditions within watershed are already below the open road density requirements in the Forest Plan. See Section 3.2, Transportation Resources for more details. The proposed road decommissioning would further reduce the open road density.</p>
13-7	<p>These arguments also apply to road 1660 which is proposed for decommissioning in the upper West Fork Hood River watershed.</p>	<p>See response to Comment 13-6.</p>
13-8	<p>We recommend that the "forest health improvement areas" should only be thinning young small diameter trees(<21") from below. No large mistletoe trees should be logged, fallen, or girdled, and minimize gaps over a certain size (I trust you to fill in what size gaps you think appropriate).</p>	<p>This project does not establish a diameter limit in order to fully meet the purpose and need for action as stated in Section 1.3. Incorporating an upper diameter limit would limit the ability to improve the forest ecosystem health. The overall purpose of this project is to improve forest conditions within the watershed by increasing health and vigor and enhancing growth by releasing trees through variable density thinning treatments to increase diameter and height growth of selected stands; improving structural and species diversity within selected stands by reducing competition induced tree growth suppression and mortality, and by releasing leave trees through variable density thinning to increase diameter and height growth; and, maintaining and enhancing aquatic habitat and riparian conditions by improving forest ecosystem health of selected stands within riparian corridors. The Proposed Action as described in Section 2.2 utilizes variable density thinning with the overall goal of leaving the best, largest trees within a stand and meeting the purpose and need for action. This applies to the Forest Health Improvement and Plantation Thin units.</p>
13-9	<p>Consider additional road decommissioning given the high road density in the area.</p>	<p>See response to Comments 12-1 and 13-6.</p>

Comment Number	Comment	Response to Comment
13-10	The collaborative group specifically discussed unit 44 and 50 being problematic. Unit 50 includes a lot of riparian and is extremely steep. Unit 44 it looked very healthy and was not a dense stand in need of treatment. There was significant agreement among those who visited the stand on this point. These two stands should be dropped. These two units are in unroaded areas.	See response to Comments 13-3 and 13-4.
13-11	"Gaps" should retain more structure to better mimic natural disturbance processes and provide a more complex habitat structure with early seral vegetation. It is better to think of gaps as small patches of very heavy thinning.	The characteristics of gaps are discussed in Section 2.2.2, Variable Density Thinning. The gaps for this project would vary from one to five acres in size based on the conditions within each unit. In gaps, minor tree species would be retained if present. Gaps are intended to create openings to support regeneration of shade intolerant species and more rot resistant species while also providing structural diversity. Gaps would be placed in units with plantation thinning and thinning for forest health improvement prescriptions and gap locations would be focused where openings already exist, in frost and wind throw pockets, and in root rot pockets. Gaps would build upon natural openings within Riparian Reserves. These gaps would only extend outward away from the nearest water body.
13-12	Logging in riparian reserves does not always achieve desired benefits for aquatic and terrestrial wildlife. Commercial logging captures mortality and reduced recruitment of wood to streams. Please produce a model showing the effect of logging versus not logging over time on dead wood recruitment.	The Forest Service is unaware of any model that would predict dead wood recruitment to a stream channel with any accuracy. Given the small area of riparian treatment and other factors outlined in Section 3.6, Fisheries & Aquatic Fauna and BA, the Forest Service believes developing our own model is unnecessary. See response to Comments 11-31 and 11-32.
13-13	Identify and retain all trees with old-growth characteristics even if they are less than 21" dbh.	See response to Comment 13-8.
13-14	Please minimize clear cutting for "logging system access." It's nice to see this disclosed but please recognize that some areas can be left untreated and natural processes can play out to recruit snags, open the canopy, reduce competition, etc. This can provide valuable habitat types that are not provided in logged areas.	As described in Section 2.2.1, the logging system access units are not clearcuts. These units (12 acres) are associated with proposed skyline logging systems. These areas would have skyline corridors in order to access roads or potential landing sites. It is estimated that no more than 10 percent of the trees would be removed to facilitate the logging activities in the adjacent units. No other activities are proposed within these units.

Comment Number	Comment	Response to Comment
13-15	Don't waste too much effort restoring forest <i>structure</i> when doing so will require continuous expenditure of money and effort to maintain. Use scarce resources efficiently by striving to restore ecological <i>processes</i> that can be self-sustaining. Recognize that insects and disease are natural ecological processes that actually help improve landscape diversity. Recognize that tree mortality recruits valuable habitat structures and makes resources available which increase the vigor of surviving trees, thus accomplishing many of the objectives of mechanical density reduction projects.	See response to Comment 13-2.
13-16	Don't focus too much on <i>tree health</i> , but think instead about <i>forest ecosystem health</i> . Use natural processes where it makes sense to do so.	See response to Comment 13-2.
13-17	Use the historic range of variability as a guide, but don't just focus on seral stage. Consider also the historic abundance of ecological attributes like large trees, large snags, the scale and distribution of patches of dense forest, roadless areas, etc. all of which have been severely reduced from historic norms. Also, consider the <i>natural</i> range of variability, which is the historic range of variability as modified by future climate change and fire suppression.	Historical Range of Variability (HRV), Plant Association Group (PAG), and other references are used to provide a baseline for site-specific prescriptions to meet the Proposed Action. Refer to Section 3.1.3, Vegetation Resources Methodology for more details on what tools were used to estimate desired future conditions for the projects plant communities.
13-18	Use diameter limits as a management tool because it provides a useful means to prevent economic values from trumping ecological values. The public supports the use of diameter limits because it provides a means to prevent economic values from trumping ecological values. It is often appropriate to use lower diameter limits for fire tolerant species like Ponderosa pine and Douglas fir, while using higher limits for fire intolerant species like grand fir/white fir. The exceptional circumstances in which diameter limits allegedly don't work, are more rare than the circumstances in which refusing to use diameter limits will lead to unintended consequences, including removal of ecologically valuable trees and lack of public trust.	See response to Comment 13-8.
13-19	When conducting commercial thinning projects take the opportunity to implement other critical aspects of watershed restoration especially pre-commercial thinning, restoring fish passage, reducing the impacts of the road system, and treating invasive weeds.	The Proposed Action (Section 2.2) includes pre-commercial thinning (sapling thinning), road decommissioning, road closures, storm proofing roads, and riparian prescriptions to address watershed restoration needs within the project area.

Comment Number	Comment	Response to Comment
13-20	Use projects as an opportunity to learn by conducting monitoring and research on the effects of thinning. There are many information gaps that need filling. Every project should generate useful information to inform future projects.	Section 2.4 describes the monitoring associated with this project. Monitoring would be conducted during all phases of the project by Forest Service personnel implementing the project as well as by resource specialists on the interdisciplinary planning team.
13-21	Young stands do not exist in isolation, so be sure to consider the effects of thinning on adjacent mature & old-growth habitat which may provide habitat for spotted owls, marbled murrelets, and other species.	All projects that overall in time and space were analyzed for all wildlife species as part of the cumulative effects analysis. For more information see Section 3.8, Wildlife Resources. For a list of all project considered in cumulative effects, see Chapter 3.
13-22	Spotted owls may use young stands for dispersal, foraging, and security from predators. It may be helpful to create a spotted owl “risk map” that identifies areas that are more or less suitable for thinning based on criteria such as: existing habitat characteristics, proximity to activity centers, proximity to NRF habitat, and proximity to recently thinned areas, non-habitat, and roads.	See response to Comment 13-21.
13-23	The agency should also consider adjusting both the location and timing of thinning to minimize the cumulative effects of widespread thinning on the sensitive and listed species.	See response to Comment 13-21.
13-24	Focus on treating the youngest stands that are most "plastic" and amenable to restoration.	Table 2-2 lists the age for each treatment unit. Only three stands are older than 75 years old.
13-25	Generally retain all the largest trees, and some of the smaller trees in all age-size classes. This can be accomplished in part by retaining untreated “skips” embedded within the stand.	As described in Section 2.2.2, variable density thinning (VDT) would be applied to all Thinning for Forest Health Improvement and Plantation Thin units, including skips. Skips would be placed where there are special features such as clumps of minor species, clumps of down logs, key snags or potential snag concentrations; or around areas of concern or protection such as wet areas, rare or uncommon plant or animal species, or archaeological sites.
13-26	Retain and protect under-represented conifer and non-conifer trees. Protect shrubs as much as possible, especially deciduous and tall shrubs, and those that produce berries and mast.	See response to Comment 13-25. Also, minor tree species would be retained in gaps.
13-27	Strive for a variable density outcome. Be creative in establishing diversity and complexity both within and between stands. Use skips and gaps within units to help achieve diversity. Gaps should be small, while skips should be a little larger, but even small clumps and patches of trees are desirable. Gaps should not be clearcut but rather should retain some residual structure in the form of live or dead trees.	See response to Comments 13-11 and 13-25.

Comment Number	Comment	Response to Comment
13-28	Landings do not make good gaps because they are clearcut, highly compacted and disturbed, more likely subject to repeated disturbance, and directly associated with roads. Using "designation by description" results in a small amount of within stand variability, but it is a significant compromise compared to the amount of variability that is ecologically desired both within and between stands and that could reasonably be accomplished with a little more effort.	Landings would not be used for gaps. The marking prescription will be determined during the implementation phase for this project. Any marking prescription selected (designation-by-description, designation-by-prescription, or individual tree marking) is required to implement the Proposed Action as described in the Decision Notice. The Proposed Action incorporates variable density thinning as described in Section 2.2.2.
13-29	The scale of patches in variable density thinning regimes is important. Ideally variability should be implemented at numerous scales ranging from small to large, including: the scale of tree fall events; pockets of variably contagious disturbance from insects, disease, and mixed-severity fire; soil-property heterogeneity; topographic discontinuities; the imprint of natural historical events; etc.	See response to Comments 13-11 and 13-25.
13-30	Retain abundant snags and course wood both distributed and in clumps so that thinning mimics natural disturbance. Retention of dead wood should generally be proportional to the intensity of the thinning, e.g., heavy thinning should leave behind more snags not less. Retain wildlife trees such as hollows, forked tops, broken tops, leaning trees, etc.	See response to Comment 13-25.
13-31	Continuous recruitment of snags is critical to development of old growth forest habitat. Think not only about existing snags but more importantly about the processes that grow and recruit snags, including: a large pool of green trees from which to recruit snags and the existence of competition and other agents of mortality. Commercial logging will significantly harm both of these snag recruitment factors.	Section 3.8.5.3 of the EA states: "Structural diversity would be improved by initiating a new age class and by creating openings. Thinning would also have an indirect impact by releasing the green retention trees. These retention trees would later become large diameter snag and downed wood." The impacts to snags, snag recruitment, and green trees is fully analyzed in Section 3.8.5.
13-32	Artificial snag creation is often proposed as mitigation for the loss of snags during logging, but snags fall down and dead wood decays, so a one-time snag creation effort provides very short-term benefits. Since logging has long-term adverse effects on snag recruitment, it is necessary to adopt mitigation with long-term effects, such as retaining generous untreated "skips" embedded within treatments areas where natural mortality processes can flourish.	See response to Comment 13-25.

Comment Number	Comment	Response to Comment
13-33	Recognize that dead wood values are sacrificed in thinned areas due to the effect of “captured mortality,” while other late successional values, such as rapid development of large trees and understory diversity may be delayed in unthinned areas, so an important step in the restoration process is to identify the most optimal mix of treated (thinned) and untreated (unthinned) areas.	See response to Comments 13-11 and 13-25.
13-34	If using whole tree yarding or yarding with tops attached to control fuels, the agency should top a portion of the trees and leave the greens in the forest in order to retain structure and nutrients on site.	Whole tree yarding is not being proposed as part of the ground-based logging. Tops would be yarded into the landing within the skyline units. All materials would remain on-the-ground in the helicopter units.
13-35	Avoid impacts to raptor nests and enhance habitat for diverse prey species. Train marking crews and cutting crews to look up and avoid cutting trees with nests of any sort and trees with defects.	The PDC (Section 2.3) minimize any potential impacts to raptor nests and protect habitat diversity. One example is: "To enhance diversity, variable-density thinning would include the retention of snags and wildlife trees where possible. The snags within plantations are small planted trees that have died. Few if any legacy snags are currently present." The impacts to raptors and their prey species is fully analyzed in Section 3.8, Wildlife.
13-36	Take proactive steps to avoid the spread of weeds. Use canopy cover to suppress weeds.	By following and implementing the PDC identified in the "Noxious Weed Risk Assessment," the Forest Service would be proactive in preventing the establishment or spread of noxious weeds.
13-37	Avoid soil disturbance and road construction.	The Proposed Action does not include any road construction. See response to Comment 13-40. Soil disturbance is fully analyzed in Section 3.4, Soil Productivity.
13-38	Buffer streams from the effects of heavy equipment and loss of bank trees and trees that shade streams.	All streams would have a riparian reserve with both entry and non-entry areas. This "No Touch" area is described in the riparian reserve prescriptions in Section 2.2.6. The riparian reserve prescription takes into consideration soil disturbance from heavy equipment, stream side and floodplain vegetation, and the primary and secondary stream shade zones. The riparian reserve prescription also was designed to retain existing large woody debris (LWD) and supply future inputs of LWD to both the stream channel and flood prone areas (floodplain).

Comment Number	Comment	Response to Comment
13-39	Mitigate for the loss of LWD input by retaining extra snags and wood (and green trees for recruitment) in riparian areas. Recognize that thinning “captures mortality” and results in a long-term reduction in recruitment of functional down wood, and that effect is not mitigated by future growth.	Riparian treatments would be designed to maintain and improve stream and wetland conditions. Within riparian reserves, skips would be placed where there are special features such as clumps of minor species, clumps of down logs, key snags or potential snag concentrations; or around areas of concern or protection such as wet areas, rare or uncommon plant or animal species, or archaeological sites. Gaps would build upon natural openings within Riparian Reserves. These gaps would only extend outward away from the nearest water body. In addition, the riparian prescription meets all the management direction within the Forest Plan, Northwest Forest Plan and Watershed Analysis (see Section 2.2.6).
13-40	Avoid road construction. Where road building is necessary, ensure that the realized restoration benefits far outweigh the adverse impacts of the road. Carefully consider the effects of roads on connectivity, especially at road/stream crossings, across ridge tops, and midslope hydrological processes (such as large wood delivery routes). The NEPA analysis should rank new road segments according to their relative costs (e.g. length, slope position, soil type, ease of rehabilitation, weed risk, native vegetation impacts, etc.) and benefits (e.g. acres of restoration facilitated), then use that ranking to consider dropping the roads with the lowest ratio of benefits to costs.	The Proposed Action does not include any permanent road construction. To minimize impacts to the environment and natural resources associated with temporary road construction (Section 2.2.4), pre-existing temporary road alignments and alignments of previously decommissioned system roads are utilized wherever practicable. There are cases where it is not feasible or undesirable to use the same alignments or landings. In some places, in order to protect residual trees, soil, and water, new temporary roads are proposed to access landings where existing system roads and old alignments are not adequate for accessing strategic locations on the ground. For this project, the temporary roads do not cross any streams and are not hydrologically connected.
13-41	Avoid log hauling during the wet season.	The occurrence and impacts associated with wet season haul have been minimized through the PDC (Section 2.3). One example is: "Log haul and snowplowing would be restricted to operating within the Normal Operating Season unless a waiver is approved. Purchasers desiring to haul outside of the Normal Operating Season would be required to apply for a written waiver from the Forest Service Representative for the Timber Sale, who would obtain approval from the District Ranger prior to the issuance of any waiver." Another example is: "Log haul outside of normal operating season should not occur on native surface and temp roads that are hydrologically connected."

Comment Number	Comment	Response to Comment
13-42	<p>If this project involves biomass utilization, the impacts need to be clearly disclosed. How will the biomass be moved from the remote corners of the treatment areas to the landings? Will there be extra passes made by heavy equipment? Will the landings be enlarged to make room for grinders, chip vans, and other equipment? Can the local forest roads accommodate chip vans? Will the roads be modified to make them passable by chip vans? What are the impacts of that? What are the direct, indirect, and cumulative impacts on soil, water, wildlife, and weeds?</p>	<p>The only potential biomass utilization would be from the landing piles, not from within the units. The biomass utilization would be timber subject to agreement under the contract. No other biomass utilization is incorporated into this project.</p>
13-43	<p>Develop an alternative that addresses carbon and climate by (a) deferring harvest of older forests to store carbon and provide biodiversity and connectivity and (b) thin younger stands to increase forest resilience and diversity and connectivity. Recognize that there is a carbon cost associated with thinning. As stands develop from young to mature to old, they recruit large amounts of material from the live tree pool to the dead wood pool and this pool continues to accumulate large amounts of carbon for centuries. Logging, even thinning, can dramatically affect the accumulation of carbon in the dead wood pool by capturing mortality, diverting it from the forest, and accelerating the transfer of carbon to the atmosphere. Carbon stays out of the atmosphere much longer if it remains in the forest as live and/or dead trees, instead of being converted to wood products and industrial and consumer waste.</p>	<p>See response to Comment 11-4.</p>
13-44	<p>If the stand is younger than 80 years, the agency may rely on the Pechman exemption and not complete surveys for rare and uncommon species. However, this exemption is intended to apply to even-aged stands, and the agency should apply the survey protocol in any portion of units with two or more predominant trees per acre.</p>	<p>See response to Comment 11-38.</p>
13-45	<p>Descriptions of the effect of NOT thinning dense young stands should incorporate the information presented in Lutz. J.A. 2005. The Contribution of Mortality to Early Coniferous Forest Development. MS Thesis. University of Washington. http://faculty.washington.edu/chalpern/Lutz_2005.pdf.</p>	<p>This reference has been reviewed and considered during the analysis for this project.</p>