

United States Department of Agriculture Forest Service

Grasshopper Restoration Draft Environmental Assessment

Barlow Ranger District, Mt. Hood National Forest, Hood River County and Wasco County, Oregon

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Contents

Contents	1
1.0 Introduction	3
1.1 Summary	3
1.2 Management Direction	3
1.3 Purpose and Need for Action	4
1.4 Public Involvement	4
2.0 Alternatives	5
2.1 Alternative 1 (Proposed Action)	5
2.2 Alternative 2 (Shelterwood Alternative)	9
2.3 Development of the Alternatives1	1
3.0 Environmental Effects	5
3.1 Air Quality10	5
3.2 Botany	8
3.3 Fisheries and Aquatic Fauna)
3.4 Fuels	5
3.5 Heritage	9
3.6 Hydrology	1
3.7 Invasive Species	5
3.8 Recreation	7
3.9 Scenery (Visual Resources))
3.10 Silviculture	1
3.11 Soils)
3.12 Transportation	2
3.13 Wildlife	4
3.14 Other Resource Information and Disclosures	4
4.0 Consultation and Coordination	7
4.1 Federal, State, and Local Agencies	7
4.2 Tribes	7
5.0 References	7

List of Tables

Table 1. Alternative 1 - Proposed silvicultural treatments	6
Table 2. Alternative 1 - Proposed treatment acres for Mt. Hood National Forest LUAs*	7
Table 3. Alternative 1 - Proposed treatment acres for Northwest Forest Plan LUAs and other	
areas*	7
Table 4. Alternative 1 - Proposed road status changes	8
Table 5. Alternative 2 - Proposed silvicultural treatments	9
Table 6. Alternative 2 - Proposed treatment acres for Mt. Hood National Forest LUAs*	10
Table 7. Alternative 2 - Proposed treatment acres for Northwest Forest Plan LUAs and other	
areas*	11
Table 8. Units dropped or reduced in acreage since the scoping period	15
Table 9. Summary of aquatic habitat indicators for the existing condition that could be affected	by
the action alternatives	21
Table 10. Effects of action alternatives on habitat indicators compared to existing conditions?	22
Table 11. Summary comparison: Eastern units and the fire-adapted ecosystem	26
Table 12. Summary comparison – Western units and wildland fire risks	28
Table 13. Current stand structure of watersheds included in the project area*	42
Table 14. Plant associations by acre within the project area	43
Table 15. Current percent of age class within the project area	43
Table 16. Current percent of stand structure within the project area	44
Table 17. Summary comparison: Density measurement indicators after treatment	47
Table 18. Summary comparison: Stand structural stages after treatment	47
Table 19. Summary Comparison: How the alternatives address other purpose and need elements	S
	48
Table 20. Soil condition classes of areas proposed for treatment*	50
Table 21. Soil erosion hazard classes of areas proposed for treatment *	50
Table 22. Action alternatives road status changes	53

1.0 Introduction

1.1 Summary

The Mt. Hood National Forest is proposing to conduct vegetation and fuels reduction treatment activities on approximately 5,280 acres on the Barlow Ranger District. This section (1.0) introduces the project. Section 2.0 describes two action alternatives designed to meet project needs. Section 3.0 summarizes potential effects of these activities on resources. Section 4.0 identifies entities consulted for this project. Section 5.0 lists references. Appendices support the document.

A vicinity map is included on the cover page of this document which displays the project's general location within the Mt. Hood National Forest and the state of Oregon. The project area is bordered to the north by the Badger Creek Wilderness and to the west by National Forest System (NFS) Road 4880-000. The southern border is near the Hood River County and Wasco County line. The project area tapers east to the Bonney Crossing campground vicinity. The legal description (within the Willamette Meridian) for areas where proposed treatments would occur include: Township 3 North, Range 10 East, Sections 1, 2, 3, 4, 9,10; Township 3 North, Range 11 East, Sections 30, 31, 32, 33, 34; Township 4 North Range 10 East, Sections 2, 3, 4, 5, 38.

This draft environmental assessment (EA) was prepared to determine whether implementation of project activities may significantly affect the quality of the human environment and thereby require the preparation of an environmental impact statement. Preparation of this document fulfills agency policy and direction to comply with the National Environmental Policy Act (NEPA). Throughout this document, the Barlow Ranger District is referred to as 'the District' and the Mt. Hood National Forest is referred to as 'the Forest'.

1.2 Management Direction

This EA tiers to and incorporates by reference the Final Environmental Impact Statement for the Mt. Hood National Forest Land and Resource Management Plan and Record of Decision (USDA 1990a) and Mt. Hood National Forest Land and Resource Management Plan (USDA 1990b), as amended, which is referred to as the 'Forest Plan' in this document.

Forest Plan amendments include the Northwest Forest Plan (Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old Growth Forest Related Species Within the Range of the Northern Spotted Owl (USDA, USDI 1994a) and Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl; Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest related Species within the Range of the Northern Spotted Owl (USDA, USDI 1994b)). Additional Forest Plan amendments can be found on the Forest <u>website</u>.

The Forest Plan guides natural resource management activities and establishes management standards and guidelines for the Forest. Consistency with the Forest Plan is addressed in each resource topic of section 3.0 and in each resource report (also referred to as specialist reports). Resource analyses included project design criteria to ensure consistency with law, regulation, policy, and standards and guidelines. Forest Plan exceptions for this project are described in section 2.1.5.

There are numerous laws, regulations, policies, recommendations and other guidance that help shape projects. Documentation about consistency with management direction is provided throughout this EA and within individual specialist reports.

1.3 Purpose and Need for Action

Over the past 100 years, fire suppression efforts and climatic conditions have altered vegetation growth, forest stand composition and growth, as well as resulted in an accumulation of dead fuels. Past management activities have created highly dense, closed-canopy stand conditions throughout much of the planning area. This resulting highly dense stand conditions has contributed to mortality of trees because of competition for nutrients, water, and sunlight. In the lower elevations of the Grasshopper Restoration planning area, where dry ponderosa pine and oak dominate the plant communities (i.e., dry mixed conifer stands), the high density of stands has slowed the development of new age classes and structural variety that would have occurred with natural disturbance in the past. At the higher elevations of the planning area, where plant communities are largely moist mixed conifer, the densely stocked stands have created continuous ladder fuels.

Most of the planning area has been mapped as Fire Regime Condition Class 2 or 3, indicating it has missed one or more natural fire events and now contain unnaturally high dead fuels. The communities of Wamic, Pine Hollow, and Sportsman's Park are east of the planning area, which have been identified in the Wasco County Community Wildfire Protection Plan as communities at "high risk" from wildfire (Hulbert, December 21, 2005, p. X). These communities are included in the Pine Hollow Wildland Urban Interface, which is located in the easterly portion of the Grasshopper Restoration planning area.

For the reasons described above, the purpose of the Grasshopper Restoration project is to conduct activities within the project area to improve the health and vigor of forested stands. There is a need to reduce risks associated with high-intensity wildfires, to enhance, restore, and protect wildlife habitat, and to contribute to a sustainable supply forest products that will help maintain the stability of local and regional economies. In order to meet this overall purpose, this project aims to:

- enhance and restore forest diversity, structure, and species composition including pine/oak habitat and riparian reserves;
- maintain a road network that provides for public and firefighter safety in the event of a wildfire;
- enhance, restore, and protect wildlife habitat; and,
- provide forest products in alignment with the Forest Plan and Northwest Forest Plan.

1.4 Public Involvement

The District began working with the Wasco County Forest Collaborative group (WCFC) on this project in early 2019 to solicit input on the purpose and need and proposed action. The District and WCFC members planned and participated in site visits to the project area. The District Ranger and resource specialists have provided regular updates at monthly WCFC meetings and have responded to requests from the group and at times, individuals from the group, regarding the project.

The Barlow Ranger District solicited public comments during a 30-day scoping period beginning July 15, 2019. Scoping letters were mailed and/or emailed to individuals, businesses, organizations, local and state governments, and the Confederated Tribes of the Warm Springs Reservation of Oregon on July 15, 2019. A complete list of individuals and entities contacted, along with the scoping comments received, are available in the project record. Comments were considered in the development of alternatives which is discussed in section 2.3.

2.0 Alternatives

There are two action alternatives for this project: Alternative 1 (also called the Proposed Action) and Alternative 2 (also called the Shelterwood Alternative). This section describes the activities proposed by each alternative and how the alternatives were developed. Section 3.0 documents the effects analysis of each alternative.

Project design criteria (PDC) were created for both action alternatives and are listed in Appendix A. PDC serve to reduce or minimize impacts of activities on resources and are part of the proposal. These were developed by the interdisciplinary team and are validated by resource specialist reports that are described further in section 3.0.

Most of the activities proposed by Alternative 1 and Alternative 2 are identical. Appendix B provides a table showing unit conditions and vegetation treatments proposed by each alternative. The differences between the alternatives are the silvicultural and fuels treatments on the same 289 acres¹. For these 289 acres, Alternative 1 proposes variable density thinning from below. Alternative 2 instead proposes shelterwood treatment on these same 289 acres. The other difference between the alternatives is that Alternative 1 would reduce surface fuels to 20-25 tons per acre on these 289 acres. Alternative 2 would reduce surface fuels to 15-20 tons per acre on these same acres.

These 289 acres are east of NFS Road 4860-000 and are designated as C1-Timber Emphasis (Matrix) lands as defined by the Forest Plan, as amended. Appendix D contains maps showing the proposed treatments.

Taking 'no action' was analyzed for each resource and is discussed in section 3.0. Under the No Action alternative, no silvicultural or fuels treatment activities would occur. Ultimately, the stands would continue to move away from desired future conditions, remaining in dense overstocked conditions with little understory reinitiation. Vulnerability to insect and disease infestations would remain high and stand density would continue to increase the stands' vulnerability to large scale disturbance including wildland fire. Road maintenance activities and road system status changes would be unlikely to occur in the short-term. Temporary roads would not be built.

Because most proposed activities are the same when comparing Alternative 1 and Alternative 2, some analyses combine both alternatives to describe an effect or condition using the term "action alternatives." This occurs when the analysis or discussion results in a similar conclusion. The two alternatives are described separately below.

2.1 Alternative 1 (Proposed Action)

The primary proposed activities involve silvicultural thinning treatments and fuels reduction treatments. Proposed treatments would occur in either dry or moist mixed conifer forested stands.

¹ All acres discussed within this document are approximate.

These treatments would occur in plantation and non-plantation stands of varying ages and treatment history. Within these treatment types, multiple densities have been identified to meet the goals for fuel reduction and restoring resilient stands and would be treated according to the existing condition on the ground.

2.1.1 Silvicultural Treatments

Vegetation management under this alternative include two silvicultural practices: variable density thinning from below (VDT) and intermediate thinning.

Table 1. Alternative 1 - Proposed silvicultural treatments

Activity	Approximate Acres
Intermediate Sapling Thinning in Plantations less than 40 years of age	1,422
Intermediate Commercial Thinning in Plantations 40-80 years of age	355
Variable Density Thinning from Below	3,503
Total Acres	5,280

2.1.1.1 Silvicultural Treatment Types

2.1.1.1.1 Variable Density Thinning from Below (VDT)

VDT would be applied where existing conditions are in an uneven-aged stand type. "Unevenaged" refers to stands having three or more age classes of trees. This method of treatment would emphasize leaving the most vigorous trees of all sizes without concern for spacing. It allows for site-specific flexibility for a reduction of stand density levels. VDT would occur in stands with recent harvest activity (after 1990) and in stands where minimal to no past management actions have occurred. Gap size would be limited to no more than 2 acres.

2.1.1.1.2 Intermediate Commercial Thinning

Intermediate thinning would be applied where existing conditions are in an even-aged or twoaged stand type. "Even-aged" refers to stands where all the trees are the same age. "Two-aged" refers to stands where there are two distinct age classes of trees. Intermediate commercial thinning would only occur in plantations between the ages of 40 and 80 years. Gap size would be limited to no more than 5 acres.

2.1.1.1.3 Intermediate Sapling Thinning

Intermediate sapling thinning would be applied where existing conditions are in an even-aged or two-aged stand type. Intermediate sapling thinning would only occur in plantations under 40 years of age. Gap size would be limited to no more than 3 acres.

2.1.1.2 Land Use Allocations

Silvicultural treatments are proposed for areas in land use allocations (LUAs) as described in the Forest Plan and Northwest Forest Plan. Treatments are also proposed for areas within the Mt. Hood National Recreation Area (NRA) and Region 6 Inventoried Roadless Areas (IRA). The two tables below describe proposed activities for these areas. To minimize confusion between overlapping land use allocations, total acres are not listed. Maps illustrating the distribution of land use allocations across the planning area are in Appendix D.

Land Use Allocation	Sapling Thinning	Intermediate Commercial Thinning	VDT
A5 Unroaded Area	62	66	0
A6 Semi Primitive Roaded Recreation	60	52	8
B4 Pine-Oak Habitat	0	0	179
B5 Pileated Woodpecker/Pine Marten Habitat Area	98	16	249
C1 Timber Emphasis	1,300	237	3,309

Table 2. Alternative 1 - Proposed treatment acres for Mt. Hood National Forest LUAs*

*All acres are approximate.

Land Allocation	Sapling Thinning	Intermediate Commercial Thinning	VDT
Matrix	1,210	83	3,492
Riparian Reserves	arian Reserves 72 21		463
Late Successional Reserve (LSR)	216	272	6
National Recreation Area (NRA)	215	272	0
Inventoried Roadless Area (IRA)	34	0	238

*All acres are approximate.

2.1.2 Fuels Reduction

Both action alternatives aim to reduce risks associated with high intensity wildfire at the project level, while also supporting strategic fuels reduction at the landscape scale by building upon work completed through the Rocky Restoration Project which is adjacent to the Grasshopper Restoration planning area. There are two fuels treatments proposed by both action alternatives to reduce risks associated with wildfire: 1) establishment of fuel breaks; and 2) prescribed burning.

Activities would take place within the footprint of areas proposed for silvicultural treatment. Objectives for fuels treatment are to create a landscape with a network of fuel breaks and openings that promote public and firefighter safety in the event of a wildfire. These fuels treatments are designed to reduce surface fuel loadings, reduce the vertical and horizontal continuity of fuels, and increase tree canopy spacing. Surface fuels would be reduced leaving approximately 10-15 tons per acre in dry plant communities and to 20-25 tons per acre in moist plant communities.

2.1.2.1 Fuel Breaks

Fuel breaks would be established along roads and ridges and are designed to compartmentalize the landscape into blocks that are representative of natural disturbance. Fuel breaks would be strategically created in areas that would facilitate lowering the risk of indirect firefighting tactics.

2.1.2.2 Prescribed Burning

Underburning is the use of prescribed fire underneath existing or residual trees to treat natural fuels such as dead woody material, needle litter, and brush. This treatment would occur in stands that can support underburning without thinning activities and within stands where thinning activities have occurred. Underburning would be used following pre-treatments such as thinning, masticating, pruning, or pile burning to further reduce the surface fuels. The use of underburning helps maintain the desired vegetation conditions and enhance the overall health and resiliency of the stand. Underburning would not occur within moist mixed conifer areas.

Pile burning is the use of prescribed fire to ignite hand piles or machine piles created during timber or fuel reduction activities. Piles consist of slash generated as a result of thinning and/or pre-treatment actions. Piling would reduce fuel loadings across the treatment unit and at landing sites. The piles would be burned once they are fully cured.

2.1.3 National Forest System Road Treatments

Both action alternatives propose road status changes within the project area. Appendix C and the transportation analysis provide detailed information about these changes. Road maintenance may occur on all haul routes as needed. This may include roads in any land use allocation within the planning area. PDC (Appendix A) for road maintenance were created to minimize impacts to resources and ensure consistency with the Forest Plan.

The table below summarizes proposed road changes. NFS Road 4810-225 is approximately 0.4 miles and is proposed for decommissioning because it is overgrown, has drainage and stability issues, and receives little public or administrative use. See the Transportation Report and Appendix C for more information about road details.

Road status	Approximate Miles
Change from open to close	1.0
Change from current status to decommission	0.4
Change from current status to ML2 Administrative Use Only	0.5
Change from ML1 to ML2	1.0

Table 4. Alternative 1 - Proposed road status changes

2.1.4 Temporary Roads

Temporary roads would be constructed in order to carry out project activities. Access to treatment units from existing main roads is necessary to facilitate the movement of forest products. Temporary roads would be constructed in areas where minimal resource impacts would be achieved as described in the PDC. To minimize impacts, pre-existing alignments would be utilized where possible. There are cases where it is not feasible to use pre-existing alignments or landings. In order to protect residual trees, soil, and water, new temporary roads may be created to access landings where existing system roads and old alignments are not adequate. Exact location and temporary road length would be determined on the ground during project implementation, and would be constructed while adhering to the PDC for road related activities.

It is anticipated that approximately seventeen miles of temporary roads would be constructed. Areas where temporary roads would be constructed would be rehabilitated as soon as practicable.

2.1.5 Forest Plan Exceptions

For this project, exceptions to Forest Plan standards are required. Exceptions to the Forest Plan standards are allowed under the Forest Plan, if they are identified during the interdisciplinary (IDT) process. Both action alternatives would require exceptions to the following Forest Plan standards:

- FW-062: "Not more than 35% of an area available for vegetative manipulation should be in a hydrologically disturbed condition at any one time."
- FW-064: "Watershed impact areas at the subbasin or area analysis level (i.e. typically 3000 to 6000 acres) should not exceed 35%."

These exceptions would be required because implementation of either action alternative would result in an estimated 38% of watershed impact areas within the Threemile Creek subwatershed which is above the 35% threshold. These exceptions are acceptable because activities would not result in a meaningful impact to hydrologic processes, and proposed thinning would contribute to restoration of forest diversity throughout the watershed. See the Hydrology Report, which is incorporated by reference, for details about effects. The Hydrology Report is summarized in section 3.6 of this EA.

2.2 Alternative 2 (Shelterwood Alternative)

The activities proposed in this alternative are identical to those proposed in Alternative 1, with two exceptions. First, Alternative 2 proposes shelterwood treatment on approximately 289 acres, compared to Alternative 1 which proposes VDT for the same 289 acres. Second, within these 289 acres, surface fuels would be treated to approximately 15-20 tons per acre, instead of 20-25 tons per acre as described in Alternative 1.

2.2.1 Silvicultural Thinning Treatments

Thinning treatment activities proposed include three silvicultural practices: shelterwood harvest, VDT, and intermediate thinning.

Table 5. Alternative 2	- Proposed	silvicultural	treatments
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Activity	Approximate Acres
Intermediate Sapling Thinning in Plantations less than 40 years of age	1,422
Intermediate Commercial Thinning in Plantations 40-80 years of age	355
Variable Density Thinning from Below	3,214
Shelterwood	289
Total Acres	5,280

2.2.1.1 Silvicultural Treatment Types

2.2.1.1.1 Variable Density Thinning from Below (VDT)

See section 2.1.1.1.1.

2.2.1.1.2 Intermediate Commercial Thinning

See section 2.1.1.1.2.

2.2.1.1.3 Intermediate Sapling Thinning

See section 2.1.1.1.3.

2.2.1.1.4 Shelterwood

In this alternative, shelterwood treatment would be utilized on approximately 289 acres of C1-Timber Emphasis (Matrix) land (compared to the VDT treatment described in Alternative 1 for these acres). This treatment would remove the majority of trees. Trees would be left in sufficient densities to provide a beneficial microclimate within the understory to allow for the development of a new generation of saplings. In general, the canopy cover within treated units would be reduced to approximately 15% to achieve this outcome. This treatment would allow more sunlight to penetrate the forest canopy while still providing limited shading from residual trees. Contiguous treatments of this type would be limited to no more than 40 acres and would be separated by blocks of land that are not classed as created openings and that contain one or more logical harvest units as described in Forest Plan standards FW–349 and FW–353.

2.2.1.2 Land Use Allocations

The two tables below describe proposed treatments by Alternative 2 for Forest Plan, Northwest Forest Plan, and other land use allocations. Shelterwood treatments are only proposed for approximately 289 acres on C1-Timber Emphasis (Matrix) lands. No other areas would be treated using the shelterwood method. Because allocations overlap, total acres are not listed. Maps showing allocations are included in Appendix D.

Land Use Allocation	Sapling Thinning	Intermediate Commercial Thinning	VDT	Shelterwood
A5 Unroaded Area	62	66	0	0
A6 Semi Primitive Roaded Recreation	60	52	8	0
B4 Pine-Oak Habitat	0	0	179	0
B5 Pileated Woodpecker/Pine Marten Habitat Area	98	16	249	0
C1 Timber Emphasis	1,300	237	3,024	289

Table 6.	Alternative 2 -	Proposed	treatment	acres for M	It. Hood N	lational I	Forest LUAs

*All acres are approximate.

Land Allocation	Sapling Thinning	Intermediate Commercial Thinning	VDT	Shelterwood
Matrix	1,211	83	3,207	289
Riparian Reserves	72	21	463	0
Late Successional Reserve (LSR)	216	272	4	0
National Recreation Area (NRA)	215	272	0	0
Inventoried Roadless Area (IRA)	34	0	238	0

Table 7. Alternative 2 - Proposed treatment acres for Northwest Forest Plan LUAs and other areas*

*All acres are approximate.

2.2.2 Fuels Reduction Treatments

Proposed activities for fuels reduction treatments are the same as described in Alternative 1 as described in section 2.1.2, except that within shelterwood units, surface fuels would be treated to approximately 15-20 tons per acre instead of 20-25 tons per acre.

2.2.3 National Forest System Road Treatments

See section 2.1.3.

2.2.4 Temporary Roads

See section 2.1.4.

2.2.5 Forest Plan Exceptions

See section 2.1.5.

2.3 Development of the Alternatives

Development of alternatives is guided by the purpose and need of the project, scoping comments from stakeholders, and new information that emerges during the planning process as a result of interdisciplinary teamwork and analyses.

The consideration of scoping comments and information that emerged as a result of interdisciplinary teamwork resulted in a need to refine proposed activities and include a fully developed second action alternative (Alternative 2). Below is a summary of the refinements that were made between the end of the July 2019 scoping period and the publication of this Draft EA.

2.3.1 Late-Successional Reserves (LSR)

The project area includes LSR in the western portion and two 100-acre LSR areas further east. Some comments supported treatments in LSR while others did not. Outcomes of interdisciplinary team analysis resulted in the decision to exclude some LSR areas from any treatment in order to ensure protection of northern spotted owls (NSO) as consistent with the White River LSR Assessment (WRLSRA) (USDA 1996) for the larger LSR and the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) for the 100-acre LSR areas. See section 2.3.11 for a list of units that were dropped or for which acres were reduced.

Proposed activities within the larger White River LSR are consistent with the WRLSRA. The WRLSRA was completed in 1996 with a local existing condition review completed in 2021. The WRLSRA breaks the larger LSR up into landscape units. This project is proposing activities within the Little Boulder Landscape Unit. Activities proposed would occur in stands under 80 years of age in single story canopy overstocked conditions and are defined in the WRLSRA as Stem Exclusion and Stand Initiation. The proposed silvicultural practices along with PDC would meet the WRLSRA criteria because such projects have a high likelihood of benefitting future late-successional forest characteristics.

Silvicultural practices proposed by this project were determined to be exempt from Regional Ecosystem Office review because "there is undesirable vegetation (competition) which delays attainment of the management objective of late successional conditions, or desirable components of the stand may be eliminated, because of such competition" (USDA, 1995).

Shelterwood treatment is not proposed in any LSR areas. The vegetation treatment table (Appendix B) and maps (Appendix D) provide LSR treatment details.

2.3.2 Riparian Reserves

Some comments supported treatments within riparian reserves while others did not. The interdisciplinary team evaluated whether or not areas of riparian reserves would benefit from treatments. Analyses concluded that thinning would result in a minor short-term reduction of available recruitment of downed woody material, and that there would be a long-term benefit as tree growth would be accelerated, ultimately providing more abundant recruitment in the larger size classes that are currently underrepresented in the Threemile Creek subwatershed. Thinning treatments proposed in the riparian zone outside of treatment buffers would hasten the development of structural complexity in stands that are currently silviculturally stagnant and would contribute to accelerated achievement of Aquatic Conservation Strategy objectives.

Fuels treatments are also proposed for some areas. Shelterwood is not proposed for any areas of riparian reserves, and if implemented, would occur well away from riparian reserves. Documentation of consistency with ACS objectives is included as Appendix E of this EA. See the vegetation treatment table (Appendix B) for details about treatment in each unit. See the Fisheries and Aquatic Fauna, Hydrology, and Soils Reports for details about how proposed treatments would affect riparian function and habitat. See Appendix A for PDC that would protect riparian reserve elements during implementation.

2.3.3 Inventoried Roadless Areas (IRA)

Vegetation and/or fuels treatment in an Inventoried Roadless Area (IRA) requires an exception to the Roadless Area Conservation Rule, Section 294.13, which must be approved by the Deputy Regional Forester as delegated by the Regional Forester. The scoping letter for this project proposed treatments on approximately 272 acres of IRA to help maintain and restore the characteristics of ecosystem composition and structure to reduce the risk of an uncharacteristic wildfire by moving the stands towards the natural fire return interval. The proposal to treat these acres was submitted to the Deputy Regional Forester and was approved in September 2019 (see

section 3.14 and the approved submission which includes a map of IRAs which is incorporated by reference and included on the <u>project website.</u>) Some comments supported treatments in IRAs and others did not. Some commenters specified that one reason they did not support treatments in IRAs is because they did not support road building (including temporary roads) in IRA. The Forest recognizes that building roads (including temporary roads) is not permissible and therefore no roads (including temporary roads) would be built. Timber haul would be achieved using existing system roads. Specialist reports include analysis for effects to IRAs.

2.3.4 Mt. Hood National Recreation Area (NRA)

Treatments within the Mt. Hood National Recreation Area (NRA) must be consistent with the Omnibus Public Land Management Act of 2009 (the Act) Section 2400 (Public Law 111-11). See section 3.14 for additional information. The Act permits the "cutting, sale, or removal of timber" for specific purposes including:

(1) "to the extent necessary to improve the health of the forest in a manner that—

(A) maximizes the retention of large trees— (i) as appropriate to the forest type; and (ii) to the extent that the trees promote stands that are fire-resilient and healthy;

(B) improves the habitats of threatened, endangered, or sensitive species; or

(C) maintains or restores the composition and structure of the ecosystem by reducing the risk of uncharacteristic wildfire"

Some comments supported and some did not support treatment in the NRA. The interdisciplinary team discovered through subsequent analyses that some areas proposed for treatment were not consistent with the Act, because wildland fire for the area would be "characteristic" rather than "uncharacteristic" for this area, resulting in inconsistency with Section 2400 (e)(1)(C). Therefore, those areas were dropped from consideration for treatment. See section 2.3.11 for a list of units that were dropped or for which acreage was reduced. The other remaining areas of NRA are proposed for treatment. Restoration of stand composition and structure for ecosystem and forest health is permitted within the NRA. Specialist reports include analyses specific to the NRA when relevant. The Forest recognizes that building system roads and temporary roads is not consistent with the Act for this project and therefore no system roads or temporary roads would be built in the NRA. The NRA. The NRA. The NRA. The NRA. The NRA is a system roads or temporary roads would be built in the NRA.

2.3.5 Shelterwood Treatment

The shelterwood alternative (Alternative 2) emerged as an alternative when the interdisciplinary team discovered that some units within the NRA could not be treated because the rationale for those treatments as previously identified would not be consistent with the Act (see section above).

The NRA units dropped from consideration for treatment were located west of NFS Road 4860-000 and were originally intended for treatment in order to support a fuel break along this road. Excluding these areas from treatment could result in a potentially less effective fuel break along NFS Road 4860-000 because only eastern portions of the road may be treated for this reason. In response, Alternative 2 was developed. This alternative proposes shelterwood treatment on approximately 289 acres of C1-Timber Emphasis/Matrix lands in some areas east of NFS Road 4860-000. (Alternative 1 proposes VDT for these same acres.) The intent of applying the shelterwood treatment would be to remove more vegetation in this strategic location, thereby addressing the need to reduce risks associated with high-intensity wildfires.

Shelterwood treatment was recognized to have potential to meet the other elements of the purpose and need concerning forest health, provision of forest products and habitat enhancement for some wildlife species. There are other portions of the planning area that, if treated using the shelterwood method, may better meet a specific element of the purpose and need. For example, shelterwood treatment in other areas could result in higher timber volume, thus better meeting the need to provide forest products. However, the activities and locations described by Alternative 2 were determined to best meet the purpose and need overall.

In 2020, the WCFC requested that the Forest Service consider a location further east from the shelterwood treatments proposed in Alternative 2 as a fuel break along NFS Road 4811-000. The interdisciplinary team met with the WCFC to discuss the suggested area. However, it was determined that due to topography and plant community characteristics, treatment in this area would be less influential on fire behavior compared to the location of the shelterwood treatments as proposed in Alternative 2. Further, activities necessary to create an effective fuel break could adversely impact wildlife habitat in some portions of the 100-acre LSR and B5-Pileated Woodpecker/Pine Marten habitat in this area. The current location of the proposed shelterwood units were determined to best meet the purpose and need and be consistent with law, regulation, and policy.

2.3.6 National Forest System Roads

Some comments pertained to road management. The analysis for the Transportation Report (summarized in section 3.12) began by focusing on roads identified as 'Likely Not Needed' in the Mt. Hood Travel Analysis Report (USDA, 2015), roads that had a differing operational and objective maintenance level as identified in previous planning efforts, and roads which continued from the Rocky Restoration planning area into the Grasshopper Restoration planning area. Then, the interdisciplinary team analyzed this subset of roads to move the road system toward the desired future conditions. See Table 4 of this EA for a summary of proposed road status changes. For details about each road in the planning area, see the Transportation Report and Appendix C of this EA.

2.3.7 Forest Plan Land Use Allocations A5 and A6

Some comments expressed concern about how the project would meet Forest Plan standards for the A5-Unroaded Recreation and A6-Semi-Primitive Roaded Recreation portions of the planning area. Lidar data have confirmed there are no existing roads currently in the A5 land use allocation. Only roads in land allocations which allow road use will be used. No new roads are proposed in any land use allocation including A5, A6, and the Mt. Hood National Recreation Area and Inventoried Roadless Area. Within the A5 land use allocation, no roads would be used, and no temporary roads would be built because the A5 area overlaps with the National Recreation Area. Material treated within the A5 land use allocation would be yarded or skidded out to roads in other land use allocations where road use for this project is appropriate (i.e., A6 or C1). See Section 3.12, the Transportation Report, and Appendix C for more details about roads. Because this project involves non-regulated timber harvest, standards A5-019 and A6-022 are applicable and would be met. See Section 3.9 and the Recreation Report for details about visuals within these land use allocations.

2.3.8 Temporary Roads

Temporary roads are proposed for this project. Some comments expressed concern about temporary roads. This project proposes final temporary road placement to be determined during

project implementation, following PDC, and as approved by the Forest Service in coordination with the operator. Temporary roads would not be placed within the NRA, IRA, A5, or A6 land use allocations. Temporary roads would not be constructed in Riparian Reserves, however in some cases pre-existing road alignments may be used. Appendix A includes PDC relevant to temporary roads.

2.3.9 Recreation Sites

Campsite expansion, reduction, or closure are activities were considered for this project during scoping. These activities are now not proposed by either action alternative because: Boulder Lake and Little Boulder Lake are no longer considered as part of the planning area; there is not a heavy concentration of campsites within the planning area; and the campsites that were inventoried for this project did not present concerns that warranted consideration of changes from existing management.

2.3.10 Wildlife

Some comments expressed concern about proposed activities' effects on northern spotted owl, snag availability, road density, and consistency with Forest Plan standards for the B5-Pileated Woodpecker/Pine Marten Habitat Area. See section 2.3.11 for a list of units that were dropped or for which acreage was reduced for northern spotted owl nest patch protection or American marten habitat in B5. The Wildlife Report includes snag and down wood analysis details, road density discussions, and B5 considerations. Appendix A includes many PDC pertaining to northern spotted owl protection, down wood, snag creation, and B5 standards. The Wildlife Report discloses effects for wildlife species including that some activities are likely to adversely affect (LAA) northern spotted owl and/or northern spotted owl designated critical habitat while others are not likely to affect (NLAA) northern spotted owl or northern spotted owl designated critical habitat. The analysis also discloses how proposed activities are consistent with all law, regulation, and policy relevant to wildlife.

2.3.11 Unit-specific Comments

Some comments expressed concerns about individual units. All units have been assessed by the interdisciplinary team to ensure proposed treatments consider existing conditions, the purpose and need of the project, and law, regulation, and policy relevant for each area. As a result of this process some areas proposed for treatment during the scoping period are now excluded from treatments.

The table below shows units that were originally proposed for treatment during scoping that have since been dropped from consideration or now have reduced acreage proposed for treatment because of either habitat needs or because of NRA concerns described in section 2.3.4. These changes apply for both action alternatives.

Unit	Description of change since scoping	Rationale for change
12	Unit Dropped	B5 (American marten) habitat
141	Acres of Treatment Reduced	NRA
147	Acres of Treatment Reduced	NSO Nest Patch Protection
151	Acres of Treatment Reduced	NRA
155	Acres of Treatment Reduced	NSO Nest Patch Protection
157	Acres of Treatment Reduced	NSO Nest Patch Protection

Table 8. Units dropped or reduced in acreage since the scoping period

163	Acres of Treatment Reduced	NRA
166	Acres of Treatment Reduced	NSO Nest Patch Protection
170	Unit Dropped	NSO Nest Patch Protection
178	Unit Dropped	NRA
183	Unit Dropped	NSO Nest Patch Protection
192	Unit Dropped	NSO Nest Patch Protection
193	Acres of Treatment Reduced	NSO Nest Patch Protection
198	Unit Dropped	NSO Nest Patch Protection
203	Acres of Treatment Reduced	NSO Nest Patch Protection
208	Acres of Treatment Reduced	NSO Nest Patch Protection
214	Acres of Treatment Reduced	NSO Nest Patch Protection
217	Unit Dropped	NRA
223	Acres of Treatment Reduced	NRA
227	Unit Dropped	NRA
240	Unit Dropped	NRA
245	Unit Dropped	NRA
246	Unit Dropped	NRA
274	Unit Dropped	NSO Nest Patch Protection
275	Unit Dropped	NRA

3.0 Environmental Effects

This section summarizes the potential effects of Alternative 1 (Proposed Action) and Alternative 2 (Shelterwood Alternative) for each potentially affected resource. Because most proposed activities are the same between Alternative 1 and Alternative 2, some specialist reports and summaries below use the term "action alternatives" to refer to both alternatives when the analysis or discussion results in a similar conclusion. Sections below are organized alphabetically.

3.1 Air Quality

This section summarizes the effects analysis that is documented in the Air Quality Report which is incorporated by reference and included on the <u>project website</u>. In summary, both action alternatives would generate short term smoke impacts that may affect local communities during prescribed fire operations. Alternative 2 may increase the number of days when burning occurs.

3.1.1 Existing Conditions

Air quality is of particular concern on the Mt. Hood National Forest airsheds. The Mt. Hood Wilderness is approximately 5 miles west/northwest of the Grasshopper project's planning area and is federally designated as a Class I area, providing visibility protection under the Environmental Protection Agency's Regional Haze Rule and the Federal Clean Air Act (OAR 2019). The Badger Creek Wilderness, a Class II area, borders the Grasshopper planning area to the north.

There are two designated Smoke Sensitive Receptor Areas (SSRA) near the Grasshopper planning boundary including the City of The Dalles, OR, and the Columbia River Gorge National Scenic Area and both of which are approximately 25 miles north of the Grasshopper project boundary. SSRAs are provided the highest level of protection under Oregon's Smoke

Management Plan. While not listed as SSRAs, the surrounding communities of Wamic, Tygh Valley, Sportsman's Park, Pine Hollow, Pine Grove and Maupin would likely be most impacted by smoke generated in the planning area.

3.1.2 Direct and Indirect Effects

3.1.2.1 No Action

Under the no action alternative, no activity fuels are generated and no prescribed burning is implemented. As a result, there would be no direct effect to air quality and human health. No fuels reduction activities occur and forest fuels would continue to accumulate. An indirect effect from taking no action would be the reduction in air quality if a large scale wildland fire occurred, which would have the potential to impact a greater area. Duration and frequency of such an event on the communities and the environment would vary immensely by weather factors, time of day, and time of year. Wildland fires tend to occur during the driest times of the year and when more forest fuels are available for consumption. As a result, wildfires have higher rates of biomass consumption and have greater potential to expose more people to smoke than prescribed fires (Navarro 2018).

3.1.2.2 Alternative 1

Alternative 1 would generate smoke during pile burning and underburning activities. Short term smoke impacts may affect local communities during prescribed fire operations. Possible impacts include decreased air quality and decreased visibility, depending on the volume of smoke and duration of emissions. Smoke can potentially impact human health through inhalation of particulate matter. Daily smoke production is governed by the State of Oregon and limits are set each day for the amount of acres allowed to be ignited. Any form of prescribed burning would follow the Oregon Department of Forestry (ODF) Smoke Management Rules. Project design criteria are included for pile construction and pile burning that maximizes burning efficiency and minimizes smoke production.

3.1.2.3 Alternative 2

All effects described above for Alternative 1 also apply for Alternative 2. In addition, Alternative 2 may create more activity generated piles. More piles does not equate to more smoke produced on a given day. More piles may create additional days of pile burning, but smoke emissions would still be regulated daily by ODF in compliance with Clean Air Act requirements.

3.1.3 Cumulative Effects

The interdisciplinary team listed projects and activities that should be considered in the cumulative effects analysis and then analyzed those projects and activities relevant to each resource. The cumulative effects analysis included the Rock Creek Sapling Thin and Underburn project (2012) and the Rocky Restoration project (2018). Both projects include proposed activities that would generate smoke and would overlap in time and space with smoke-generating activities proposed by both Grasshopper action alternatives. The proximity of these projects to one another would not increase the amount of smoke emissions impacting residents on a given day, even with other projects in the area implementing prescribed fire activities simultaneously, because of the Smoke Management Rules regulated daily by ODF. However, the Grasshopper project could increase the number of days when burning occurs.

3.1.4 Forest Plan Consistency and Other Management Direction

The Mt. Hood Forest Plan states management activities shall comply with all applicable air quality laws and regulations, including the Clean Air Act and its associated Oregon State Implementation Plan (FW 040-041). Additionally, impacts of prescribed burning on smoke sensitive areas shall be minimized. Total particulate emissions shall be reduced consistent with goals set by the Oregon Department of Environmental Quality (FW 052-053).

By following the Smoke Management Rules regulated daily by the Oregon Department of Forestry, both action alternatives would comply with the Environmental Protection Agency's Regional Haze Rule, Clean Air Act, the Mt. Hood Forest Plan, and the Oregon Smoke Management Program ODF Oregon.

3.2 Botany

This section summarizes the effects analysis that is documented in the Botany Report which is incorporated by reference and included on the <u>project website</u>. In summary, both action alternatives may directly impact individuals or habitat may impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability of the population or species (MIIH) for sensitive plants, bryophytes, lichens and fungi. Alternative 2 may remove more habitat for sensitive species.

3.2.1 Existing Conditions

There are over 100 plant, bryophyte, lichen and fungi species which were determined to have historic known sites or suitable habitat within the project area and adjacent watersheds. See Appendix 1 of the Botany Report for the full list of species considered during the pre-field review and the summary of findings. There are no known occurrences of, or habitat for federally listed endangered or threatened plants within the Grasshopper planning area.

The majority of the project area units were previously managed stands, dominated by younger Douglas-fir and ponderosa pine. This includes plantation stands and sapling thins. The average stand density in these units has resulted in decreased understory diversity, typically dominated by hardy smaller shrubs such as tall snowberry and wild rose.

Some units in the western, higher elevation units have had minimal management in the past, and have stands with an average age over 180 years, dominated by large, legacy Douglas-fir, hemlock and true fir and with large down woody material and layers of litter or duff. This combination of age and structure components is considered 'old-growth' habitat according to the 2001 ROD. Certain stands also have evidence of root rot or other forest health concerns. During surveys, a large diversity of fungal species with both mycorrhizal and saprobic functions were found, suggesting that these areas support a healthy fungal community.

3.2.2 Direct and Indirect Effects

3.2.2.1 No Action

The No Action alternative would have no direct effects to any of the target sensitive species. There are potential indirect effects. Stands with dense growth will continue to experience reduced plant diversity and this could also affect suitable habitats. If a high intensity fire were to burn through this system, loss of individuals and habitat are likely. Many areas could be returned to early-seral stand conditions, which do not favor the sensitive species of concern and may instead promote the growth of invasive weed species.

3.2.2.2 Alternative 1

Alternative 1 (the Proposed Action) may directly impact individuals or habitat for sensitive plants, bryophytes, lichens and fungi, but would not lead toward federal listing or loss of viability. The major threats that could result from the proposed activities to these species are the direct loss of populations due to ground disturbing activities such as timber harvest and temporary road construction, direct removal of host trees for epiphytic species, or harvesting activities and application of fire that disturb litter and soil. Indirect effects could include invasive weed introductions through equipment use. Site buffering and other project design criteria (PDC) are included to reduce negative effects on known sensitive species or avoid habitats. Additional PDC would reduce the risk for invasive weed establishment. For more information about invasive species, see Section 3.7 of this document and the Invasive Species Report which is incorporated by reference.

Proposed activities could also have a beneficial effects on species. By returning disturbance to this area, improving the stand structure and removing excess fuels, many species may see long-term habitat benefits.

3.2.2.3 Alternative 2

All effects described above for Alternative 1 also apply for Alternative 2. In addition, Alternative 2 may remove more habitat for sensitive plants, bryophytes, lichens and fungi on the approximately 289 acres proposed for shelterwood treatments. However, shelterwood treatments would not lead toward federal listing or loss of species viability.

3.2.3 Cumulative Effects

The interdisciplinary team listed projects and activities that should be considered in the cumulative effects analysis and then analyzed those projects and activities relevant to each resource. The spatial area analyzed for cumulative effects included the project area boundary, designated haul routes and directly adjacent lands 100 feet from the project boundary within private ownership, federal ownership and designated Wilderness that would be affected by the alternatives. The areas where direct botanical sensitive species could be impacted are only within treatment units. Areas 100 feet adjacent to these units could also experience edge effects from the change in stand conditions. The temporal scale analyzed included timber harvest and road building projects. The conditions created by these past actions have been incorporated into the existing condition of the Botany and Invasive Species reports and serve as a baseline for the effects determination.

Proposed activities could contribute slightly to cumulative effects on undetected rare plants, fungi, bryophytes and lichens. Project Design Criteria are in place to protect known sites and sensitive habitats. Invasive species also could have a cumulative effect on botanical resources. See Section 3.7 of this document and the Invasive Species Report for consideration of invasive species risks. Cumulative effects would not be substantial and would not result in a loss of species viability.

3.2.4 Forest Plan Consistency and Other Management Direction

Activities proposed by both action alternatives are consistent with Forest Plan standards related to sensitive botanical species. Required surveys for species on the Survey and Manage list were

conducted. Project design criteria are included to reduce negative effects on known sensitive species or avoid habitats.

3.3 Fisheries and Aquatic Fauna

This section summarizes the effects analysis that is documented in the Fisheries and Aquatic Fauna Report (Fisheries Report) which is incorporated by reference and included on the <u>project</u> <u>website</u>. Species that are not present within the project area or do not have habitat within the project area were not analyzed. Effects are summarized below. Unless otherwise noted, effects are the same for activities proposed by both Alternative 1 and Alternative 2.

Federally Threatened, Endangered or Proposed Species, Designated Critical Habitat, or Essential Fish Habitat

• None Present.

Region 6 Sensitive Species

• There are three aquatic Region 6 Sensitive Species that are or may be present in the planning area: *Inland Columbia Basin Redband Trout, Cope's Giant Salamander*, and *Rocky Mountain Duskysnail* (also called the *Columbia Duskysnail*). For all species, activities **may impact individuals or habitat**, **but would not likely contribute to a trend towards federal listing or cause a loss of viability of the population or species (MIIH).**

Survey and Manage Species

• There are two aquatic Survey and Manage species that are or may be present in the planning area: *Rocky Mountain Duskysnail* (also called the *Columbia Duskysnail*) and *Basalt Juga*. For both species, activities **may impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability of the population or species (MIIH).**

Aquatic Habitat Indicators

• The current condition of habitat indicators including *temperature*; *sediment, turbidity, and substrate*; and *change in peak/base flows* would be **maintained** by both action alternatives. The current condition of habitat indicators *including large wood frequency and recruitment* and *riparian reserves* would be slightly **enhanced** by both action alternatives.

3.3.1 Existing Conditions

3.3.1.1 Aquatic Species

Species listed as Sensitive on the Region 6 Regional Forester's Special Status list that are or may be present in the Grasshopper Action Area are Inland Columbia Basin Redband Trout, *Oncorhynchus mykiss* spp. *gairdneri*, Cope's Giant Salamander, *Dicamptodon copei*, and Rocky Mountain Duskysnail, (*Colligyrus greggi*), also called the Columbia Duskysnail (*Lyogyrus* n. sp. 1)). There are also two Survey and Manage Species as outlined by Forest Service et al. 2001 that may be present within the Action Area: Rocky Mountain Duskysnail, (*Colligyrus greggi*), also called the Columbia Duskysnail, (*Colligyrus greggi*), also called the Columbia Duskysnail, (*Colligyrus greggi*), also called the Columbia Duskysnail (*Lyogyrus* n. sp. 1), and the Basalt Juga, *Juga* sp. nov. (*Basalt*.

3.3.1.2 Aquatic Habitat

There are five habitat indicators that could be affected by the action alternatives: water temperature; sediment, turbidity and substrate; change in peak/base flows; large wood frequency and recruitment; and riparian reserves. The table below summarizes the existing condition of these indicators. See section 3.1 of the Fisheries Report for details. Because much of the analysis for the Fisheries Report is dependent upon effects of proposed activities on hydrologic features and processes, see section 3.6 of this EA and the Hydrology Report.

Table 9. Summary of aquatic habitat indicators for the existing condition that could be affected b	у
the action alternatives	

Indicator	Properly Functioning	Functioning at Risk	Not Properly Functioning
Temperature		Х	
Sediment, Turbidity and Substrate	Х		
Change in Peak/Base Flows		Х	
Large wood Frequency and Recruitment		Х	
Riparian Reserves ²		Х	

3.3.2 Direct and Indirect Effects

3.3.2.1 No Action

If no action is taken, there would be no immediate effect to aquatic habitat or species. There would be no direct short-term changes in hydrologic processes affecting water quantity or water quality. Existing patterns of stand growth in Riparian Reserves would continue trending in the same direction. An increased risk of fine sediment input to area streams would be due primarily to roads not being maintained/repaired, and thus the chance for erosion and subsequent sedimentation would be greater. Forested riparian stands would have smaller and shorter trees and, eventually, fewer live trees per acre but more snags. Although increased levels of down wood in the short-term would likely occur, the small size of the down material would decay quickly and not provide the same habitat benefit as larger wood, especially in larger streams. In the long-term, Riparian Reserves would be threatened by the spread of insect and disease and susceptibility to wildfire.

3.3.2.2 Action Alternatives

3.3.2.2.1 Aquatic Species

Under both action alternatives, the only treatments that could have a direct effect on aquatic species or habitat within the Riparian Reserves of Threemile Creek would be sapling thinning, underburning or skyline yarding. Sapling thin treatment could occur up to the edge of the stream bank on approximately 35 acres within the primary shade zone of Riparian Reserve stands in 11 separate units. No ground-based equipment would operate within 100 feet of the stream, and

² Riparian reserve widths include two site potential tree height along fish bearing streams, or within one site potential tree height along any non-fish bearing intermittent streams, seeps, ponds, or wetlands less than 1 acre. Buffers are measured from the edge of the bankfull channel on both sides of the stream (or water's edge in the case of a pond or wetland). Buffers would be expanded to include slope breaks where appropriate. The inner riparian is defined as the area within a Riparian Reserve that is within 100 feet of a stream. Thus, the inner riparian includes the 60-foot buffers on perennial streams and the 30-foot buffers on intermittent or ephemeral streams where no treatment with the exception of prescribed fire would occur.

only hand treatment could occur up to the edge of the stream bank on up to 0.6 miles of stream. Not all of the trees immediately next to the bank would be felled on the 0.6 miles with hand treatments. There is a slight chance that hand treatment of trees near the stream margin would cause an aquatic organism to startle or would remove stream cover, thus also causing an aquatic organism to move. Underburning could also cause aquatic organisms to move. Thus, the action alternatives have the potential to directly affect aquatic organisms, but the amount of habitat impacted and thus the number of individuals affected would be minimal. In skyline yarding corridors that cross the Threemile Creek stream channel, felled trees could land in the stream channel causing aquatic fauna disturbance, injury, or possibly death. The number of trees to be felled into channels is unknown (if any) and the risk of direct effects is low, especially death of individuals, but not completely discountable. There would be no direct effects to aquatic species or habitat in the Boulder Creek watershed because there is no treatment proposed on or near the stream banks and because no underburning is proposed. Both Alternatives 1 and 2 **May Impact Individuals or Habitat (MIIH) for Region 6 sensitive species present but will not likely contribute to a trend towards Federal listing or loss of viability to the population or species.**

3.3.2.2.2 Aquatic Habitat

The table below summarizes effects of the action alternatives and is followed by a brief summary about each habitat indicator.

Habitat Indicator	Existing Condition	Action Alternatives (Alternatives 1 and 2)
Temperature	Functioning at Risk	Maintain
Sediment, Turbidity and Substrate	Properly Functioning	Maintain
Change in Peak/Base Flows	Functioning at Risk	Maintain
Large Wood Frequency and Recruitment	Functioning at Risk	Enhance
Riparian Reserves	Functioning at Risk	Enhance

Table 10. Effects of action alternatives on habitat indicators compared to existing conditions

Temperature

Both action alternatives would include commercial plantation thinning, VDT and sapling thin treatments on less than 400 acres of Riparian Reserves stands. With the exception of 11 sapling thin units (specified in PDC), no treatments would occur in the primary shade zone of streams and wetland areas. Sapling thin units with the potential to impact the primary shade zone would occur on up to 0.6 miles of stream along Threemile Creek, and the Hydrology specialist report concludes that the proposed thinning would have no measurable effect on water temperature. In the long-term, there would be indirect benefits to these riparian stands because of improved health and vigor of the remaining trees and the associated accelerated improvement in streamside shade conditions after project implementation. However, because the accelerated improvement occurs on such a small percentage of the riparian area, benefits of this action would not affect stream temperature. Both Alternatives 1 and 2 will have no effect on stream temperature and there will be **no impact** on Region 6 sensitive species habitat or habitat.

Sediment, Turbidity, and Substrate

Both action alternatives include the use of unpaved road crossings for log haul and other heavy equipment, the rehabilitation of some roads for access to specific units, and the construction of temporary roads would result in minor, localized sediment entering waterways. However, the implementation of PDC would ensure that these quantities of sediment would be minor and short-

term. Also, because no mechanical equipment would be operated within 100 feet of streams and waterways and there would be no-cut buffers of 30 to 60 feet on all streams except for 0.6 mile of channels within sapling thinning (done by hand-felling), there would be no effect on sediment delivery to streams. In the long-term, there would be minor, although immeasurable, indirect benefits as a result of road maintenance work that would occur in conjunction with the proposed action. Both Alternatives 1 and 2 will result in a discountable effect on sediment, turbidity, and substrate that has no impact on Region 6 sensitive species habitat or habitat.

Change in Peak and Base Flows

See the Hydrology specialist report for information about effects of the action alternatives regarding Watershed Impact Areas (WIAs), intra-annual peak flows, canopy cover at the watershed scale, system roads and temporary roads. While canopy cover will be reduced in the Action Area, the scope and intensity of treatment is insufficient to cause measurable effect on hydrologic condition in the Action Area. Therefore Alternative 1 will result in discountable effect to peak/base flows and there will be no impact on Region 6 sensitive species or habitat.

Under Alternative 2, there would be approximately 150 acres of shelterwood treatments in the Threemile Creek watershed. This amounts to less than one percent of the total watershed area. The Hydrology specialist report concludes that the geographic extent of the treatments would represent such a small percentage of the watershed that hydrologic impacts would be imperceptible. All of the other effects to peak/base flows would be the same as Alternative 1. Therefore Alternative 2 will result in discountable effect to peak/base flows and there will be no impact on Region 6 sensitive species or habitat.

Large Wood Frequency and Recruitment

Under both action alternatives, all of the Riparian Reserve treatment areas are located adjacent to streams with minimum protection no-cut buffers of 60 feet for perennial streams and 30 feet along intermittent streams and a 40- 50% canopy cover retention in the treated portion of the riparian stands. Thinning these stands would be beneficial by reducing competition and accelerating growth of the remaining trees. All Western Red Cedar would be retained, regardless of diameter. Proposed silvicultural treatment outside protection buffers in Riparian Reserve would reduce the trees per acre and thus reduce the total number of trees available as potential down wood in the short term, however improved health and growing conditions for remaining trees would improve the overall quality of wood recruitment for the larger size classes, thus meeting large wood recruitment objectives more effectively in the long term. In the short term, in-stream large wood could be reduced within the treatment units but would result in higher quality wood recruitment over the long term. Because trees within the Riparian Reserves would grow larger and would also grow more quickly, recruitment of large wood to the floodplain and the stream channel would increase over the long term. Both Alternatives 1 and 2 will result in a long-term beneficial effect to large wood frequency and recruitment and thus there would be a beneficial impact to Region 6 sensitive species and habitat.

Riparian Reserves

The primary goals of the Riparian Reserve treatments include improving species composition, enhancing structural diversity, and improving future quality of downed wood and in-stream large wood. Proposed treatments would remove understory competition where appropriate to allow for new age classes of trees to establish and would also allow for growing space and nutrient availability to the remaining trees. Ultimately the stands would be healthier and more resilient to large scale disturbance impacts. Riparian conditions and function in the Threemile Creek Action Area would improve over the long-term as a result of the proposed treatments. While there would be a minor short-term negative impact to the available recruitment of downed woody material, there would be a long-term benefit as tree growth would be accelerated, ultimately providing more abundant recruitment in the larger size classes (over 30") that are currently underrepresented. The VDT and sapling thin treatments being proposed in the outer riparian zone would hasten the development of structural complexity in stands that are currently stagnant (see Silviculture specialist report). These treatments would contribute to accelerated achievement of Aquatic Conservation Strategy objectives. The direct and indirect effects of thinning these stands would be beneficial by reducing competition and accelerating growth of the remaining trees. Thinning treatments in the outer riparian zone would occur on approximately 40 percent of the riparian reserve network within the Threemile Creek portion of the Grasshopper planning area. This amounts to less than 25 percent of total riparian reserve network on FS managed lands within the Threemile Creek subwatershed.

PDC would maintain the condition of the inner riparian reserves. With the exception of prescribed fire which may crawl into the inner riparian zone, there would be a 60-foot protection (no-entry) buffer on the main channel (perennial) of Threemile Creek, and a 30-foot protection buffer on intermittent tributaries. Thus, the inner riparian would remain undisturbed. Protection buffers would serve to maintain current shade conditions, maintain small wood recruitment, maintain snags for standing and down wood recruitment, and protect all waterbodies from sediment generated from proposed action activities. Where commercial plantation thinning and VDT would be applied within Riparian Reserves, trees would not be cut within the protection buffers. To avoid impacts to soil and prevent sediment delivery to waterbodies, no mechanized equipment would operate within 100 feet of any waterbody. To prevent reduction in stream-shade and minimize large wood recruitment loss within riparian reserves where vegetation management will occur, a minimum of 40-50% canopy cover would be maintained. Both Alternatives 1 and 2 **will result in a long-term beneficial effect to Riparian Reserves** and thus there would be a **beneficial impact** to Region 6 sensitive species and habitat.

3.3.3 Cumulative Effects

The interdisciplinary team listed projects and activities that should be considered in the cumulative effects analysis and then analyzed those projects and activities relevant to each resource. Proposed activities could have a minor contribution to cumulative effects on aquatic fauna and habitat because of slight reductions in large wood recruitment potential, resulting in localized reduction in recruitment along Threemile Creek which may result in less in-stream wood for the next 50 years or more within those reaches. This slight reduction in in-stream wood could impact habitat for resident redband rainbow trout, salamanders, and aquatic macroinvertebrates. None of the actions proposed in this EA would directly reduce existing levels of large wood in any stream.

3.3.4 Forest Plan Consistency and Other Management Direction

Activities proposed by both action alternatives are consistent with Forest Plan standards and guidelines for fish, other aquatic fauna and habitat. Activities proposed by both action alternatives are consistent with the Northwest Forest Plan Riparian Reserve Standard and Guides and Aquatic Conservation Strategy (ACS) objectives. Documentation of ACS consistency can be found as Appendix E of this EA. Activities proposed by both action alternatives are consistent with all other law, regulation and policy including direction for Inventoried Roadless Areas and the Mt. Hood National Recreation Area.

3.4 Fuels

This section summarizes the effects analysis that is documented in the Fuels Report which is incorporated by reference and included on the <u>project website</u>. In summary, both action alternatives would reduce the risks of uncharacteristic wildland fires in the fire adapted ecosystem, and would reduce the extent and severity of wildland fires originating from the west. Both action alternatives would create defensible space and areas of safe engagement for fire suppression personnel along Forest Service roads. The shelterwood alternative would provide for a more robust fuel break along NFS Road 4860 by a further reduction in surface fuel loadings and canopy cover. The shelterwood alternative would create conditions along NFS Road 4860 less conducive to crown fire initiation and susceptibility, providing an increase in defensible space for fire suppression personnel when compared to the proposed action.

The Grasshopper Restoration project proposes treatments across a landscape that has both East Cascade and West Cascade characteristics. In the eastern portion of the planning area, a low-severity, "fire adapted" fire regime (Agee 1993) shaped dry forest types dominated by ponderosa pine and Douglas-fir (Wright 2004). Towards the west and increasing in elevation, the planning area transitions to a stand replacing fire regime, made up of moist mixed conifer species. This report describes methods used to determine fuels treatments for both portions of the planning area, and the effects of those treatments and other activities proposed. Because the treatments were designed differently to meet the purpose and need for both the eastern and western portions of the planning area, the discussion is divided into two sections (3.4.1 and 3.4.2).

3.4.1 Eastern Units and the Fire-Adapted Ecosystem

3.4.1.1 Existing Conditions - Eastern Units

Areas in the eastern part of the Grasshopper Restoration project are characterized as a fire adapted ecosystem, consisting of Fire Regimes I and III. In this fire-adapted landscape, the exclusion of fire and past forest management actions have resulted in a departure from the natural fire regime. Surface fuels, which are comprised of litter, needles, moss, rotten and sound logs, woody debris and slash, allow a fire to transition from the ground to the overstory tree crowns. Surface fuel loadings (measured in tons per acre) have increased as a result of missed disturbances. The fuels have accumulated to loadings above what would be considered normal in historical context. As fuel loadings increased, so has the horizontal and vertical continuity. With no breaks in the continuity of fuels, fires have the ability to spread across the landscape quicker and with higher flame lengths. This increases the potential of a wildland fire transitioning into a crown fire.

3.4.1.2 Direct and Indirect Effects - Eastern Units

Proposed treatments were designed to return fire to the fire-adapted ecosystem which would help restore the area to historical conditions and create resiliency.

The table below compares the effects of no action to the proposed action and the shelterwood alternative. No action would result in a higher likelihood of a high severity fire while fuels reduction treatments are shown to be effective at reducing burn severity within a large wildfire (Dodge 2019). In regard to restoring the fire adapted ecosystem, both the proposed action and the shelterwood alternative have the same direct effect.

Resource Element	Indicator or Measure	No Action	Proposed Action	Shelterwood Alternative
Fire Resistance	Fire Regime Condition Class	 85% of Fire Regime I and IIIA remain in FRCC 2 or 3 and at risk for uncharacteristic wildfire effects. In the absence of disturbance or treatment, FRCC 1 conditions transition towards FRCC 2. Overtime, all areas of the fire adapted ecosystem would be outside historic conditions and at risk for loss of key ecosystem components. Higher likelihood of an uncharacteristic high severity fire. 	A variety of treatments occur. Surface fuels are reduced to 10-15 tons per acre and understory vegetation is thinned removing ladder fuels. Variable density thinning from below reduces canopy cover to 48%, removing smaller trees while retaining the larger more resilient trees. The use of prescribed fire is incorporated into fire management planning and the fire adapted landscape begins to transitions back towards FRCC 1, operating within historic range of normal. Fuels reduction would reduce burn severity within a large fire.	Shelterwood alternative would have the same effect as the proposed action.
Fire Resistance	Fire Behavior	High loads of brush and shrubs create conditions leading to increased fire behavior and uncharacteristic wildfire effects. Fuel models not indicative of low severity fire dominate the fire adapted ecosystem. Increased fire spread, flame lengths and overstory mortality are possible during wildland or prescribed fire events. Higher likelihood of an uncharacteristic high severity fire.	Treatments would remove brush, shrubs and thin overstocked stands to modifying fuel profiles. Fuel models indicative of low severity fire (TL 4and TL 8) comprise the 75% of the fire adapted landscape. 25% remains in other fuel models to account for mixed severity disturbances. Flame lengths are low, spread rates are slow and low mortality in overstory trees can be expected. Restoration treatments would reduce fire behavior along NFS Road 4811, supporting a road network	Shelterwood alternative has the potential to provide an indirect effect of reducing fire behavior. By further reducing crown fire potential along the 4860 road, initial attack success is increased, reducing the potential of stand replacing fire impacting the eastern planning area

 Table 11. Summary comparison: Eastern units and the fire-adapted ecosystem

firefighter safety.

3.4.1.3 Cumulative Effects – Eastern Units

Previous projects analyzed for cumulative effects include the Rock Creek Sapling Thin and Underburn project from 2012 and the Rocky Restoration project from 2018. These projects were looked at due to their proximity to the Grasshopper Project planning area and the similarities in proposed treatments for fuels reduction. Rocky Restoration is adjacent to, and directly south of the Grasshopper planning area. Rock Creek Sapling Thin and Underburn is south and east of Grasshopper by 4 miles. Both Rocky Restoration and the Rock Creek Sapling Thin project are in implementation and are being considered in cumulative effects.

All three projects propose treatments that would restore fire adapted landscapes with intent to return fire to the ecosystem. An increase in prescribed fire use would affect air quality, with the potential to impact the communities of Wamic, Pine Hollow and Tygh Valley. Please see the Air Quality report for more information.

3.4.1.4 Forest Plan Consistency - Eastern Units

The proposed action and the shelterwood alternative are consistent with the Mt Hood Forest Plan, as amended, including all standards and guides for forest protection and air quality.

3.4.2 Western Units and Wildland Fire Risks

3.4.2.1 Existing Conditions – Western Units

To the western portion of the planning area, the landscape increases in elevation and transitions to moist mixed conifer forest, depicted by a stand replacing fire regime rather than the fire adapted ecosystem that characterizes the eastern units. These are categorized as Fire Regime IVC and VA (Evers 2002). Fires burn with high severity and have a long return interval. A return interval of 100-200 years is considered in the range of normal for disturbance events.

Wildfires starting in the higher elevations and moving east, pushed by predominately west winds, are a concern to the communities adjacent to National Forest System lands. A stand replacing fire originating in the Badger-Tygh subwatershed has the potential to detrimentally affect ownerships east of the Forest boundary, under worst case scenarios a fire beginning in Badger Creek could threaten the communities of Wamic, Pine Hollow and Tygh Valley (USDA 1995). This scenario developed in 1973, when the Rocky wildfire started in an area just south of the Grasshopper planning area which burned over 7500 acres and threatened communities. In 2005, Wasco County, Oregon created a Community Wildfire Protection Plan (CWPP). This plan identified the Pine Hollow Wildland Urban Interface (WUI) as the area with the highest hazard risk rating of those analyzed in the CWPP (Hulbert 2005). The eastern portion of the Grasshopper planning area extends into the Pine Hollow WUI.

Three major disturbance types (fire, insect and disease) interact to create large openings and elaborate vegetative mosaics in this area. When a stand replacing fire event occurred, several hundred to several thousand acres would burn. Following a large scale disturbance, brush fields would cover the area for 10-20 years, then conifers would begin to dominate. In 20-50 years, fuel loadings would be sufficient to allow a re-burn in the footprint of the disturbance (USDA 1995).

While there is a large percentage (70%) of the stand replacing fire regimes in Fire Regime Condition Class (FRCC) 2, overall this area of the Grasshopper project is operating in the range of normal. However, conditions can be found in these areas that are reflective of the departure from normal and are notably the increase in downed woody material, or surface fuels. Conditions exist (excessive ladder fuels, continuous surface fuels and continuity in overstory trees) for stand replacing wildland fires to occur in, and around, the mixed conifer of the Grasshopper planning area. Crown fires, or a high severity surface fire can be expected in this area during periods of high to extreme fire danger. However, limited opportunities exist for firefighters to perform direct, or indirect, attack on an emerging wildland fire that occurs in these fuels. When conditions (topography, weather and fuels) align, firefighting resources may not be able to safely engage in fire suppression efforts, or to facilitate evacuations of forest users, no matter the fire danger.

3.4.2.2 Direct and Indirect Effects - Western Units

Proposed fuels treatments in the more western portion of the planning area, characterized by higher elevation mixed conifer, are designed to provide for public and firefighter safety in the event of a wildfire, as well as reduce wildfire threats to communities and resources.

The table below compares the effects of no action to the proposed action and the shelterwood alternative. This summary is in regard to reducing wildland fire threats in the western units.

The proposed action and shelterwood alternative show that a management scheme which includes fuel treatments in combination with other land management scenarios is critical for successfully reducing the size and intensity of wildfires (Van Wagtendonk 1996).

Additionally, the conclusion that there will always be a role for well-designed fuel break systems which provide options for managing entire landscapes, including wildfire buffers, anchor points for prescribed natural fire and management-ignited fire, and protection of special features (Omi 1996) especially applies for this project and in this location. Approximately 2.0 miles of road, in a north to south line, would be treated to reduce the extent of stand replacing wildfires that typically move in a west to east direction. As noted by Finney (2001), it is clear that the greatest reduction in fire size and severity occurs when fuel treatment units limit fire spread in the heading direction.

Resource Element	Indicator or Measure	No Action	Proposed Action	Shelterwood Alternative
Fire Resistance	Fire Behavior	Conditions remain for large, stand replacing fire events. A fire originating from the west has the potential to move east and impact communities and other values at risk.	2,050 acres would be treated to reduce risks associated with stand replacing fire.Canopy cover is reduced to 48% to lessen crown fire risk and initiation. Surface fuels are treated to reduce flame lengths. Canopy base heights are increased to	All proposed actions would carry over into the shelterwood alternative except for 284 acres proposed for shelterwood treatment in place of a variable density thinning from below. Shelterwood treatment would occur on the eastside of NFS Road 4860.

Table 12. Summary comparison – Western units and wildland fire risks

3.4.2.3 Cumulative Effects - Western Units

Previous projects analyzed for cumulative effects include the Rock Creek Sapling Thin and Underburn project from 2012 and the Rocky Restoration project from 2018. These projects were looked at due to their proximity to the Grasshopper Project planning area and the similarities in proposed treatments for fuels reduction. Rocky Restoration is adjacent to, and directly south of the Grasshopper planning area. Rock Creek Sapling Thin and Underburn is south and east of Grasshopper by 4 miles. Both Rocky Restoration and the Rock Creek Sapling Thin project are in implementation and are being considered in cumulative effects.

All three projects propose treatments that would restore fire adapted landscapes with intent to return fire to the ecosystem. An increase in prescribed fire use would affect air quality, with the potential to impact the communities of Wamic, Pine Hollow and Tygh Valley. Please see the Air Quality report for more information.

3.4.2.4 Forest Plan Consistency – Western Units

The proposed action and the shelterwood alternative are consistent with the Mt Hood Forest Plan, as amended, including all standards and guides for forest protection and air quality.

3.5 Heritage

This section summarizes the effects analysis that is documented in the Heritage Report which is incorporated by reference and included on the <u>project website</u>. In summary, both action alternatives would be expected to have no, or extremely minor, effects on historic properties. Historic properties include any prehistoric or historic district, site, building, structure, or object

included in, or eligible for inclusion in, the National Register of Historic Places (NRHP) as defined by 36 CFR 800. Consultation was completed in 2020.

3.5.1 Existing Conditions

The project planning area is part of the lands ceded to the federal government by the Confederated Tribes of the Warm Springs Reservation of Oregon (CTWSRO) in the Treaty with the Tribes of Middle Oregon in 1855. The CTWSRO consists of Sahaptin, Upper Chinookan, and Numic speaking people who resided along the Mid-Columbia River and its major southern tributaries during the Contact period. The CTWSRO reserved their right to fish, hunt game, and harvest other foods and materials from these lands.

Fourteen archaeological sites have been recorded within the Grasshopper planning area during the current and previous surveys. Some sites are related to pre-contact lifeways. The majority of sites relate to historic period timber harvest or fire support.

3.5.2 Direct and Indirect Effects

3.5.2.1 No Action

If no action is taken, changes to the existing conditions over time have the potential to lead to indirect effects to historic properties. Fuel loads would likely increase across the landscape contributing to increased potential for severe wildfire. Severe uncontrolled wildfire would negatively impact the long-term stability of historic properties. Possible effects include loss of perishable artifacts and features, increased erosion and bioturbation, increased tree mortality, and greater resource visibility which increases the possibility of looting. These effects have the potential to alter, destroy, relocate, remove, and otherwise negatively affect historic properties. The dense vegetation found in the existing conditions also depresses productivity and limits access to areas that support culturally significant plants.

3.5.2.2 Action Alternatives

Both action alternatives are expected to have no, or extremely minor, direct effects on all known cultural resources within the project planning area as long as PDC are followed.

The action alternatives have the potential to cause direct effects on undiscovered cultural resources. This possibility however is limited by PDC that call for an immediate halt to project work and notification of the East Zone Archaeologist should an inadvertent discovery of cultural resources be made. Prescribed fire treatment has the potential to cause direct effects on undiscovered cultural resources without the option to immediately halt project work; however, considering standard pedestrian survey has been conducted throughout the majority of the treatment area, likelihood of impacts to undiscovered cultural resources is greatly reduced.

An indirect effect may result from the reduction of vegetation as proposed by the action alternatives that happen to coincide with archaeological sites. This would reduce the potential adverse effects of wildfire on archaeological and historic resources within the project area.

3.5.3 Cumulative Effects

The interdisciplinary team listed projects and activities that should be considered in the cumulative effects analysis and then analyzed those projects and activities relevant to each resource. Because this project would have no, or extremely minor, effects on cultural resources analyzed, and none of the projects considered for potential cumulative effects affected cultural

resources, there would be no cumulative effects to cultural resources as a result of implementing either action alternative.

3.5.4 Forest Plan Consistency and Other Management Direction

This action is consistent with Forest Plan Standards and Guidelines for protection of cultural resources. Cultural resource inventories were conducted in compliance with the 2004 Programmatic Agreement during the project planning stage (FW-598, FW-600, FW-610, FW-602 and FW-606), the field survey results were fully documented (FS-608), and the potential effects to cultural resources from the proposed projects were assessed (FW-609, FW-610). Cultural resources potentially affected by proposed project activities were evaluated for inclusion on the NRHP (FW-612).

All documentation and data related to this field work were incorporated into a Cultural Resource Inventory Report which was submitted to the Confederated Tribes of the Warm Springs Reservation of Oregon (CTWSRO) Tribal Historic Preservation Office (THPO) and the Oregon Historic Preservation Office (SHPO) for review and concurrence. The THPO concurred on August 7, 2020 with the finding of *No Historic Properties Affected* within the Project Area of Potential Effects (APE). SHPO concurred on August 26, 2020 with the finding of *no effect* on any significant archaeological objects or sites (SHPO Case No. 20-1055).

3.6 Hydrology

This section summarizes the effects analysis that is documented in the Hydrology Report which is incorporated by reference and included on the <u>project website</u>. In summary, both action alternatives would increase the extent of watershed impact areas because of canopy cover reduction. Riparian conditions and function would improve over the long-term because thinning would reduce competition and accelerate the growth of remaining trees.

3.6.1 Existing Conditions

The proposed project would occur primarily in the White River watershed at the 5th field watershed scale and the Threemile Creek watershed at the 6th field subwatershed scale. The Threemile Creek watershed is approximately 22,500 acres and ranges in elevation from approximately 1500 feet to 5200 feet. Lands managed by the Forest Service account for approximately one third of the total watershed area (7,200 of 22,500 acres) and include the entirety of headwaters.

3.6.1.1 Water Quantity: Peak Flow and Base Flow

The aggregate recovery percentage (ARP) value for the Threemile Creek 6th field subwatershed is calculated to be approximately 80%. This ARP value is estimated to be the maximum extent of Watershed Impacts Areas (WIAs) and is considered low to moderate given the geo-physical and hydro-climatic characteristics of the Threemile subwatershed. Therefore, peak flows and their influence on channel forming processes, such as redistributing bedload, coarse sediment, and woody debris, are considered to be properly functioning. The potential impact of existing roads on peak streamflow in Threemile Creek subwatershed is considered low.

According to the White River Watershed Assessment, base streamflows in the Threemile Creek watershed have been influenced by timber harvest, road construction, and water withdrawals for off-forest irrigation. Of these factors, water withdrawals have had the most substantial impact on base flows as evidenced by complete dewatering of the creek in some years (USDA 1995). However, the primary factors driving base streamflow conditions in Threemile Creek are related

to the amount and timing of precipitation, particularly late winter snowfall and summer rainfall. The interannual variability of these patterns outweighs other factors influencing base streamflow originating from Forest Service managed lands in Threemile Creek.

3.6.1.2 Water Quality: Temperature and Sediment

Threemile Creek water quality impairment has been known to exist because stream temperatures occasionally exceeded state standards. Data collected by the Forest Service over the course of 14 summer seasons from 1996 through 2019 (data was not collected all years) show that 7-day average maximum stream temperatures near the forest boundary (below the proposed project area) typically stay below 16 degrees C. As a result of this most recent data, stream temperatures in Threemile Creek are considered acceptable in providing for the beneficial uses of the stream.

3.6.1.3 Riparian Function and Channel Morphology

Riparian reserve forest stands within proposed treatment units are currently dominated by midseral characteristics, in a stem exclusion phase of development. These stands lack the structural diversity and large tree component associated with late seral multi-storied forests which are an important aspect for achieving Aquatic Conservation Strategy objectives. Additionally, stream survey data (USDA 2013) show that all reaches of Threemile Creek are deficient in the presence of Large Woody Debris (LWD). The overall condition of the primary shade zone is effective at protecting the stream from exposure to incoming solar radiation (USDA 2013). On approximately 15 percent of the riparian area, where previous regeneration timber harvest has occurred, there is a mix of early-seral conditions and the effectiveness of streamside shade in these stands is currently limited.

On Forest Service managed lands, the channel morphology of Threemile Creek and its perennial tributaries is characterized by moderate to steep, gravel dominated stream reaches. These types of stream reaches tend to have moderate entrenchment and width-to-depth ratios, stable to very stable banks, and relatively infrequent pool spacing (USDA 2007). These characteristics are consistent with stream survey data (USDA 2013) that show less than one percent of the banks are unstable and primary pool frequency is low. Stream survey data (USDA 2013) show that the abundance of LWD and frequency of pool habitat does not meet LRMP standards and guidelines, but whether, and to what ex tent, those conditions are outside the range of natural variability has not been clearly quantified (USDA 1995). On approximately 7 miles of the mainstem of Threemile Creek that flows through Forest Service managed lands, the upper half has characteristics that make it more sensitive to disturbance while the lower half has a low to very low sensitivity to disturbance (USDA 2013, Rosgen 1996).

3.6.2 Direct and Indirect Effects

3.6.2.1 No Action

The No Action alternative would have no direct effects on hydrology and watershed function. There would be no direct short-term changes in hydrologic processes affecting water quantity or water quality. Similarly, there would be no direct changes to riparian function and channel morphology. Interannual variability in precipitation and temperature patterns, particularly patterns of winter snowpack accumulation and summer rainfall, would be the dominant force affecting watershed processes and streamflows.

Peak flow and base flow regimes would remain unchanged in the short-term and would respond, slowly and incrementally in the long-term, to increasing canopy cover across the subwatershed.

Stream temperatures would continue to provide for the beneficial uses of the aquatic systems within the project area, with natural variability in weather and climate patterns driving both within-season and interannual variations in water temperature. Sediment delivery to streams, from all sources, would continue to approximate the range of natural variability and current water quality conditions would be maintained. Riparian forest stands would continue to be dominated by mid-seral characteristics and deficiencies in the recruitment of large diameter downed would persist in the long-term.

3.6.2.2 Action Alternatives

3.6.2.1 Water Quantity: Peak Flow and Base Flow

Under Alternative 1, on roughly five percent of total watershed area, post-treatment canopy cover would be slightly less than established thresholds (MTH 1998) and would therefore be classified as WIAs. However, these thinned stands would retain a portion of their overstory canopy, which would continue to play an important role in the patterns of snow accumulation and melt that drive peak streamflow processes. Due to continuing growth post treatment, it would be expected that thinned stands would become fully hydrologically recovered in 30-50 years, depending on individual stand plant communities, and would no longer be considered WIAs.

Due to locations and PDC and BMPs applied during implementation, there would be no meaningful impact to peak and base flows as a result of activities associated with road decommissioning or new temporary road construction.

Under Alternative 2, all direct and indirect effects are the same as Alternative 1, with the exception of the degree of hydrologic impairment in WIAs where shelterwood treatments would occur. As with other elements of the action alternatives, shelterwood treatment in these subwatersheds is proposed for such a limited portion of land, which is characterized by moderate slopes (<30%) and outside of riparian reserves, that it is considered inconsequential to hydrologic processes.

3.6.2.2 Water Quality: Temperature and Sediment

Both action alternatives would have the same effects on water quality because shelterwood treatments under Alternative 2 would occur well away from riparian reserves and other hydrologically connected areas of the watershed.

The Proposed Action would include variable density thin (VDT) and sapling thin treatments on less than 400 acres of Riparian Reserves stands. With the exception of 11 sapling thin units (specified in PDC), no treatments would occur in the primary shade zone (due to a 60-foot protection buffer) of perennial streams and wetland areas (also specified in PDC). Sapling thin units with the potential to impact the primary shade zone would occur on approximately 35 acres, which amounts to less than 0.6 miles of stream along Threemile Creek. Stands receiving sapling thin treatments are in early-seral development and currently provide limited streamside shade, particularly during summer months. Removal of small diameter trees from the primary streamside shade zone in these stands could result in miniscule increases in solar radiation reaching the stream but because of their limited extent and current condition, would have no measurable effect on water temperature. In the long-term, there would be indirect benefits to these riparian stands because of improved health and vigor of the remaining trees. Improvement in streamside shade conditions would be accelerated after project implementation. However, because the accelerated improvement occurs on such a small percentage of the riparian area, benefits of this action would not affect stream temperature.

Thinning treatment within 60 feet of perennial streams and waterways would only be implemented in select units (see PDC) using hand crews, not heavy machinery. By eliminating ground disturbing activities within the inner Riparian Reserves there would be no new sediment delivery pathways created by this portion of the Proposed Action and therefore no direct effect on sediment delivery to streams. NFS road work and temporary road construction activities would likely result in localized sediment entering waterways in the form of dust from roads and fine sediment from ditch-relief runoff during the first winter storms of the season. However, these quantities of sediment would be minor – undetectable in comparison to existing conditions or the No Action alternative – and would be of short duration. In the long-term, there would be minor, although immeasurable, indirect reduction in sedimentation as a result of road maintenance work.

3.6.2.3 Riparian Function and Channel Morphology

Both action alternatives would have the same effects on riparian function and morphology because treatments for Riparian Reserves are identical between alternatives.

Generally, riparian conditions and function would improve over the long-term as a result of the proposed treatments. While there would be a minor short-term negative impact to the available recruitment of downed woody material, there would be a long-term benefit as tree growth would be accelerated, ultimately providing more abundant recruitment in the larger size classes (over 30") that are currently underrepresented in the Threemile Creek subwatershed (USDA 2013). The VDT and sapling thin treatments being proposed in the outer riparian zone (the zone outside of the 60-foot and 30-foot no-cut buffers) would hasten the development of structural complexity in stands that are currently silviculturally stagnant (see silviculture report). These treatments would contribute to accelerated achievement of Aquatic Conservation Strategy objectives. Documentation of consistency with ACS objectives is included as Appendix E of this EA. The direct and indirect effects of thinning these stands would be beneficial by reducing competition and accelerating growth of the remaining trees.

Over the long-term, the recruitment of larger diameter downed wood would play an important role in channel forming processes, building more complex channel features that would tend to hold water longer and provide more productive habitat for aquatic organisms. Thinning treatments in the outer riparian zone would occur on approximately 40 percent of the riparian reserve network within the Threemile Creek portion of the Grasshopper planning area. This amounts to less than 25 percent of total riparian reserve network on FS managed lands within the Threemile Creek subwatershed.

Because thinning treatments to the inner riparian zone, as defined by 60-foot and 30-foot no cut buffers, would be avoided, it would remain intact and undisturbed. The inner riparian zones would continue to be dominated by a continuous forest cover. The availability of streamside woody debris would remain high in the small and medium size classes and an abundance of organic inputs would continue to be available within the riparian network. Treatment buffers within the inner zone of riparian areas would also protect the integrity of streambanks, and by extension, near-stream erosional processes that could alter substrate conditions and related channel forming processes. Additionally, riparian reserves along approximately 1.5 miles of Threemile Creek in the uppermost portion of the watershed would receive no treatment because they are either outside of the project area or excluded by PDC. This additional area of no treatment would further minimize potential negative impacts to channel morphology.

3.6.3 Cumulative Effects

The extent of WIAs serve as an indicator of the cumulative effect to hydrologic processes that could be collectively coupled to changes in water quantity, water quality, riparian function, and channel forming processes that would be expected to persist over the long-term.

Currently, WIAs across all ownerships within the White River watershed, including FS lands, is estimated to be 18 percent. The Action Alternatives would increase the extent of WIAs across the watershed by an estimated 0.6 percent. On lands managed by the FS, the extent of WIAs is estimated to be about 28 percent and the Action Alternatives would increase this value by an estimated one percent. At the watershed scale, a total increase of one percent in the extent of WIAs on FS managed lands resulting from the Action Alternatives is a considered inconsequential and would have no cumulative effect on hydrologic processes.

Currently, WIAs across all ownerships within the Threemile Creek subwatershed, including FS lands, is estimated to be 20 percent, whereas the extent of WIAs on FS managed lands is estimated to be 25 percent. The Action Alternatives would increase the extent of WIAs across all ownerships within the watershed by an estimated 5 percent and within FS managed lands by an estimated 13 percent. At the subwatershed scale, an increase of 5 percent in the extent of WIAs is a relatively low amount and would have no measurable impact on water quantity, water quality, riparian function or channel forming processes. On the portion of lands managed by the FS, the increase in WIAs would reach a threshold of concern (38%) (USDA 1990). Therefore, the action alternatives would require an exception to Forest Plan standards FW-062 and FW-064. However, because WIAs on FS lands would be dominated by conditions that facilitate a moderate degree of hydrologic function rather than complete impairment, and because of the geophysical and site specific characteristics of the watershed, the extent of WIAs would not lead to measurable changes in inter-annual peak flows. There could be minor changes in peak flows with return intervals less than about 2 years (Grant et al. 2008), however given the stream channel characteristics (USDA 2013) these flows would not have any meaningful influence on bedload movement and channel morphology (USDA 2007).

Stands receiving shelterwood treatments would increase the extent of WIAs by as much as two percent of FS managed lands within the Threemile Creek subwatershed. All other treated stands, including those receiving relatively heavy VDT, would still retain a portion of the overstory that would partially function as an effective forest canopy. Thinning treatments would not render stands completely ineffective but could accelerate snowmelt processes under certain conditions (Grant et al. 2008). It is estimated that the canopy of stands proposed to be heavily thinned, would still function to a degree and would maintain a portion of their hydrologic effectiveness in the first year after treatment (MTH 1990). Due to continuing growth in treated stands, it would be expected that effectiveness of the post-treatment canopy would increase. The thinned stands would become hydrologically recovered in about 30-50 years, depending on stand plant communities and intensity of treatment, and would no longer considered to be a WIAs.

3.6.4 Forest Plan Consistency and Other Management Direction

Implementation of either action alternative would require a Forest Plan exception for FW-062 and FW-064. FW-062 states, "Not more than 35% of an area available for vegetative manipulation should be in a hydrologically disturbed condition at any one time." FW-064 states, "Watershed impact areas at the subbasin or area analysis level (I.e. typically 3000 to 6000 acres) should not exceed 35%". Refer to section 3.6.3 above and the Hydrology Report for details about the extent of WIAs in the Grasshopper project area and potential effects of WIAs on hydrologic processes

and watershed function. The action alternatives would be consistent with all other Forest Plan Standards and Guidelines for water resources (FW-054 to FW-079).

Implementation of either action alternative would be consistent with the Northwest Forest Plan Record of Decision (ROD). The ROD includes Standards and Guidelines specifically related to management activities in Riparian Reserves. Additionally, the ROD details the Aquatic Conservation Strategy (ACS) as a means for maintaining and restoring the productivity and resilience of riparian and aquatic ecosystems across federal lands of the western Pacific Northwest. The alternatives for the Grasshopper project have been developed in such a way as to ensure compliance with ROD S&G as well as ACS objectives. A detailed summary about consistency with ACS objectives is included as Appendix E of this EA.

Requirements associated with the Federal Clean Water Act (CWA) and Oregon Department of Environmental Quality water quality regulations will be met through implementation and monitoring of PDC and Best Management Practices (BMPs), following guidance in USDA National Best Management Practices for Water Quality Management on National Forest System Lands (USDA 2012).

Consistent with the Omnibus Public Land Management Act of 2009, activities would not degrade the protection, preservation, and enhancement of values for which the Mt. Hood National Recreation Area was established including watershed values. There would be no direct impact and immeasurable impacts to water resources within Inventoried Roadless Areas (IRAs). For more information about the Mt. Hood NRA and exceptions to treat in IRAs, see sections 2.3 and 3.14 of this EA.

3.7 Invasive Species

This section summarizes the effects analysis that is documented in the Invasive Species Report which is incorporated by reference and included on the <u>project website</u>. In summary, both action alternatives have a moderate risk of weed introduction, but Alternative 2 may have a higher risk compared to Alternative 1.

3.7.1 Existing Conditions

The project area has been subject to past disturbances and has multiple resource uses today. There are minimal infestations of invasive species within this project area and these populations are limited to roadways or trails. There are limited weeds present within the proposed treatment units. Diffuse and spotted knapweed are the primary invasive species of concern in this project area. Annual invasive grasses and St. Johnswort are present to a lesser extent. Smaller, isolated populations of other invasive weed species including Scotch broom, thistle species and oxeye daisy occur within or adjacent to the project area.

3.7.2 Direct and Indirect Effects

3.7.2.1 No Action

The No Action alternative would have no direct risk for invasive weed species introduction. There are potential indirect effects. Stands with dense growth would continue to experience reduced plant diversity and this could also affect suitable habitats. If a high intensity fire were to burn through this system, many areas could be returned to early-seral stand conditions which may promote the growth of invasive weed species.

3.7.2.2 Alternative 1

Alternative 1 has a moderate risk of invasive weed species infestation. Proposed activities could introduce or spread invasive species because timber removal and associated actions such as temporary road construction and road maintenance create disturbed, bare ground where these weeds can establish. Activities could remove competitive vegetation which may be preventing the growth of invasive species. Proposed applications of fire would carry a higher risk of promoting the spread of invasive annual grasses, and rock product material imported to the area for the repair and maintenance of roads could introduce invasive species. The project area currently has low levels of weeds due to past control efforts. Conceivably, all the treatment acres would become more susceptible to some degree of weed establishment. Project Design Criteria were written to minimize introduction of new weed species, and reduce spread of current invasive species into areas without infestation as well as to other areas of the forest.

3.7.2.3 Alternative 2

Alternative 2 also has a moderate risk of invasive species infestation, and all effects described above for Alternative 1 also apply for Alternative 2. However, there may be a slightly higher risk to shelterwood treated acres (approximately 289 acres) since it proposes more removal of mature canopy and fuels removal, creating more favorable conditions for invasive species.

3.7.3 Cumulative Effects

The interdisciplinary team listed projects and activities that should be considered in the cumulative effects analysis and then analyzed those projects and activities relevant to each resource. Cumulatively, activities overlapping in time and space may have an increased risk of weed introduction or spread. The spatial area analyzed for cumulative effects included the project area boundary, designated haul routes and directly adjacent lands 100 feet from the project boundary within private ownership, federal ownership and designated Wilderness that would be affected by the alternatives. Areas 100 feet adjacent to the planning area could also experience edge effects from the change in stand conditions. These areas are spatially connected by travel routes and vectors for invasive weed spread or include habitats of concern for invasion. The temporal scale analyzed included past thinning projects, future fuels reduction and associated actions proposed as part of this analysis, and future grazing practices within the allotment. PDC would reduce risk for the Grasshopper project. Under the 2008 Site-Specific Invasive Plant Treatment EIS, roadside populations would be treated regularly depending on the need and level of infestation.

3.7.4 Forest Plan Consistency and Other Management Direction

Both action alternatives are consistent with Forest Plan direction that prioritizes the identification and control of invasive plants. Forest Plan direction established by the 1988 Managing Competing and Unwanted Vegetation ROD and the 1989 Mediated Agreement was superseded by the 2005 Pacific Northwest Region Invasive Plant Program Preventing and Managing Invasive Plants FEIS. The Site-Specific Invasive Plant Treatments for Mt. Hood National Forest and Columbia River Gorge National Scenic Area in Oregon FEIS/ROD (USDA 2008) amended the Forest Plan. Project Design Criteria 11-G, 12-G and 13-G ensure project compliance with relevant standards and guidelines.

3.8 Recreation

This section summarizes the effects analysis that is documented in the Recreation Report which is incorporated by reference and included on the <u>project website</u>. **In summary, both action**

alternatives would have minor short-term impacts on trails, trail access, and dispersed recreation access. Motorized trail access would be more impacted because the motorized trail system is limited on the Forest. Both action alternatives would have long-term effects including change of condition or aesthetics of some trails and dispersed campsites. Alternative 2 would be more impactful to motorized trail conditions long-term due to greater reduction of vegetation adjacent to the trails.

3.8.1 Existing Conditions

Recreational use within the planning area is moderate with the majority of recreational activities occurring in the spring, fall and summer months. The majority of the planning area falls within the Roaded Modified or Roaded Natural Recreational Opportunity Spectrum (ROS) settings. For areas within the A5 (unroaded recreation) LUA, Forest Plan standards specify the Semi-Primitive Non-Motorized (SPNM) ROS setting and this is currently being met. For areas within the A6 (unroaded recreation) LUA, Forest Plan standards specify the Semi-Primitive Motorized Recreation (SPM) ROS class and this is currently being met.

There are no developed recreation facilities within the project boundary, though the Bonney Crossing Campground is adjacent to the boundary. The majority of recreational use occurs along trails and in the general forest area as dispersed recreation. There are motorized and nonmotorized trails within the planning area. The western portion of the planning area is part of the Mt. Hood National Recreation Area. The project is adjacent to the Badger Creek Wilderness. Neither action alternative proposes activities in Wilderness.

3.8.2 Direct and Indirect Effects

3.8.2.1 No Action

No action within the planning area would not impact on recreation as it occurs today. Existing facilities and opportunities would remain unchanged.

3.8.2.2 Action Alternatives

Activities proposed by both action alternatives would have no effect on the ROS settings applied to the planning area. The desired condition and experience identified for the roaded natural and roaded modified ROS would remain because the proposed treatments would not have an effect on the interactions between users and would not substantially change the environment within which visitors recreate. Further, areas within the A5 and A5 LUAs would continue to meet the ROS settings prescribed by Forest Plan standards (SPNM and SPM, respectively).

Activities proposed by both action alternatives would have no effect on developed recreation facilities because none exist within the project boundary. Bonney Crossing Campground is outside of the project boundary and would not be affected because it would remain accessible throughout implementation.

Both action alternatives would have short-term impacts to dispersed recreation because access to some dispersed activities and campsites would be unavailable during project implementation. Thinning in particular areas could alter the condition of some sites in the long term. For example, overhead shading at dispersed campsites could be removed. Implementation of the proposed treatments may also create new locations which would be desirable for use as dispersed campsites or for dispersed activities. The overall magnitude of the effect would be minimal due to the large number of dispersed recreation across the Forest.

Both action alternatives would have short-term impacts to recreational trail use during implementation due to closures. There is also the potential for impacts to trail tread and aesthetics, although PDC have been identified to lessen this impact. Impacts to the tread and aesthetics of motorized trails would be greater under Alternative 2 as these trails have no buffers and less vegetation would remain along trail corridors.

Because both action alternatives would improve forest health, recreation values within the NRA would be enhanced rather than impaired for the long term.

No activities are proposed for areas within Wilderness. However, some units are adjacent to Wilderness. The introduction of invasive species into Wilderness would impact the natural character the Wilderness is managed for. PDC are included to mitigate potential spread or introduction of invasive weeds into Wilderness.

3.8.3 Cumulative Effects

The spatial area analyzed for cumulative effects included the planning area but also considered areas outside of the planning area when appropriate. The temporal scale considered activities within the recent past, present and future.

Cumulative effects would not be substantial. PDC such as restricting project operations to weekdays and non-holidays would mitigate impacts to recreation. Changes to recreational opportunities would be minimal considering the abundance of Forestwide recreational opportunities, with the exception of motorized trail access which is more limited on the Forest. However, all trail and dispersed campsite closures would be only for a limited time. See section 3.2.3 of the Recreation Report for details.

3.8.4 Forest Plan Consistency and Other Management Direction

Both action alternatives are consistent with Forest Plan standards, including standards for the A5 and A6 land use allocations. Thinning activities proposed within these land use allocations pertain to non-regulated timber harvest and are consistent with the applicable Forest Plan standards (A5-019 and A6-022). Regulated timber harvest is defined by the Forest Plan as harvest that contributes chargeable timber volume to the Allowable Sale Quantity (ASQ). ASQ is the quantity of timber that may be sold from the area of land covered by the Forest Plan for a time period specified by the plan. The A5 and A6 LUAs are not considered suitable for timber production and would not contribute to ASQ. Proposed activities within A5 and A6 land use allocations would improve forest health within the stands, enhancing recreation by improving aesthetics for both trail users and visitors enjoying dispersed recreation.

Activities proposed for both activities would be consistent with the ROS settings prescribed within the planning area, including those for A5 and A6 LUAs (A5-001 and A6-001).

Both alternatives are consistent with direction for the Mt. Hood NRA provided under the 2009 Omnibus Public Law 111-11. Activities would not degrade the protection, preservation, and enhancement of values for which the NRA was established including recreation. No new roads including temporary roads would be constructed within the NRA. Activities would improve forest health in treated areas, thereby enhancing recreation values in the long term.

3.9 Scenery (Visual Resources)

This section summarizes the effects analysis that is documented in the Visuals Report which is incorporated by reference and included on the <u>project website</u>. In summary, Alternative 1 would slightly detract from Visual Quality Objectives (VQOs) in the short-term, and enhance VQOS in the long term. Alternative 2 would have a higher impact on visual quality in the short-term for areas where shelterwood treatment is visible.

3.9.1 Existing Conditions

The three Visual Quality Objectives (VQOs) that apply for the project area include *Retention*, *Partial Retention*, and *Modification*. Because of past vegetation management activities Land Use Allocations A5 and A6 do not currently meet the prescribed *Retention* Visual Quality Objective (VQO). Sensitivity Level I Trails are currently meeting the prescribed *Retention* VQO in the Near Foreground (NFG) and Sensitivity Level II trails are currently meeting the prescribed *Partial Retention* VQO for the NFG. All other visible portions of the project area have a prescribed VQO of *Modification* and this is currently being met. See the Visibility Rating Table in section 5.0 of the Visuals Report, which discloses the visibility of each unit, broken down by proposed silvicultural treatment type. Areas within the National Recreation Area overlay either A5, A6, or C1 LUAs and are prescribed the corresponding VQO (either *Retention* or *Modification*). Areas within Inventoried Roadless Areas overlay with the LUA C1 and area prescribed the corresponding VQO of *Modification*.

The *Preservation* VQO applies for areas within the A2 LUA (Wilderness) as viewed from within Wilderness. Because neither action alternative proposes activities within Wilderness, the *Preservation* VQO does not apply for this project.

VQOs associated with Designated Viewsheds that are outside of, but in proximity to, the project area (Forest Road 48, White Wild and Scenic River, and Rock Creek Reservoir/ Campground) were analyzed. However, they would not be impacted by this project because areas proposed for treatment are not visible from these Designated Viewsheds.

3.9.2 Direct and Indirect Effects

3.9.2.1 No Action

If no action were taken, the existing visual condition of the landscape would continue to persist. In the short term, there would be no direct or indirect effects to visual resources and generally most areas would meet Forest Plan management objectives. In the long term, conditions in some areas may become overstocked, cluttered, similar in texture, exhibit less diversity in age and species, and provide minimal sight distance into the Forest, which would not meet desired future conditions for visual resources according to the Forest Plan (USDA 1990, Four 7-8).

3.9.2.2 Alternative 1

Slight detraction in visual quality would occur in the short term in areas of A5 and A6 which are visible and for which the *Retention* VQO apply. This slight detraction would be acceptable because of proposed treatment type (sapling or commercial thinning) and because stands currently do not meet their associated VQOs. Through the implementation of the proposed treatments as well as associated PDC, these stands would be moved toward desired future conditions, exhibiting more diversity in tree species and age, structural variability, and blending better with the surrounding landscape. Visual intrigue would be increased in the long term.

Sensitivity Level I and II Trails would continue to meet associated VQOs because of PDC which prescribe a 100-foot no-cut buffer; Far Foreground (FFG) VQOS would not apply because these areas would not be visible from the trails. For areas where the prescribed VQO is *Modification*, visual quality would be slightly affected upon implementation but would again meet the *Modification* VQO shortly after. For these areas, sapling thinning, commercial thinning, or VDT would occur.

3.9.2.3 Alternative 2

Impacts of activities proposed by Alternative 2 would be identical to those proposed by Alternative 1 except for units where shelterwood is proposed. All units proposed for shelterwood treatment are within the C1 LUA, for which the associated VQO is *Modification*. However, the South Fork Threemile Trail (Trail # 466.1) crosses through one of the units proposed for shelterwood. This Sensitivity Level I Trail has associated VOOs of *Retention* in the NFG and the PDC which prescribes no-cut buffers would protect the VQO. All other visible areas of proposed shelterwood units have a Modification VQO. Forest visitors viewing the results of this proposed treatment would see an abrupt change in forest character continuity after travelling through other nearby areas. The drastic change in landscape would at first be a detraction in visual quality. Human evidence through management activities would be more prominent upon implementation with a larger, more open disturbed area contrasting against treated areas that blended better with the surrounding landscape. Effects from implementation of the proposed shelterwood treatment would be acceptable because they occur in areas where VQOs allow management activities to be more evident. In the long term, as the stands moved towards the proposed treatment's desired conditions, these units' stark contrasts would begin to fade and visually incorporate themselves with the surrounding results of the other proposed treatments.

3.9.3 Cumulative Effects

The interdisciplinary team listed projects and activities that should be considered in the cumulative effects analysis and then analyzed those projects and activities relevant to each resource. The cumulative effects analysis assessed the cumulative visual impacts that this project, when combined with surrounding activities or projects that overlap in time and space, could have on the visual resource. Activities and projects considered included but were not limited to the Rocky Restoration Project, 2020 White River Fire and post-fire projects, and Sapling Thinning and Eastside Mastication Categorical Exclusions. Overall, since the changes to scenery would be minimal with either proposed action alternative, and visual quality objectives would be met for both alternatives and other projects, cumulative effects would not be substantial.

3.9.4 Forest Plan Consistency and Other Management Direction

Proposed activities, including PDC, would be consistent with law, regulation and policy including that pertaining to the Mt. Hood National Recreation Area, Inventoried Roadless Areas, and the Forest Plan standards and guidelines relevant to visual resources in all LUAs.

3.10 Silviculture

This section summarizes the effects analysis that is documented in the Silviculture Report which is incorporated by reference and included on the <u>project website</u>. In summary, both action alternatives would move moist mix and dry mix conifer stands closer to desired conditions. Alternative 2 would provide additional early successional habitat or stand initiation structural stage when compared to Alternative 1. This structural stage would provide for more diversity of species composition and structure while also providing defensible space

during a large scale (wildfire) event. Alternative 2 would provide more timber volume when compared to Alternative 1.

Section 3.10.2 describes direct and indirect effects. A comparison of alternatives is provided in section 3.10.3.

3.10.1 Existing Conditions

3.10.1.1 Vegetative Conditions at the Landscape Scale

3.10.1.1.1 Plant Communities

The White River watershed analysis divides the Grasshopper project area into three climatic zones (Crest, Transition, and Eastside). The majority of Grasshopper project area is within the Transition sub-division and has smaller sections within the Crest and Eastside sub-divisions. The Transition sub-division of the watershed is dominated by several vegetative zones including but not limited to Ponderosa pine (Pinus Ponderosa), Douglas-fir (Pseudotsuga menziesii), western larch (Larix occidentalis) western white pine (Pinus monticola) with the climax species of grand fir (Abies grandis) and western hemlock (Tsuga heterophylla). The Eastside subdivision has similar vegetative zone to the transition subdivision with different climax species of Douglas-fir, ponderosa pine, and Oregon white oak (Quercus garryana). The Crest zone is the most productive and biologically diverse climactic zone within the watershed. Favorable moisture and climate provide an area able to support a high diversity of plant and animal species in all successional stages. National Forest System lands make up sixty percent of these watersheds with non-federal ownership as the other principal landowners.

3.10.1.1.2 Forest Structure and Composition

In general, the watershed is currently comprised of approximately 38% early seral stands (Stand Initiation and Stem Exclusion), 35% mid seral stands (Understory Reinitiation) and 21% late seral stands (Mature Stem Exclusion and Late Seral Multistory). The largest concentration of early seral stands is in the eastern portion of the watershed. Within the federally managed lands in the north western portion of the watershed forest structure types are more equally represented between the seral stages. The southern portion of the watershed represents the area with the highest concentration of late seral stand types (Mature Stem Exclusion and Late Seral Multistory (reference Table 10).

Stand Structure	Seral Stage	Percent of Watersheds
Stand Initiation	Early	19%**
Stem Exclusion	Early to Mid	19%
Understory Reinitiation	Mid	35%
Mature Stem Exclusion	Mid to Late	16%
Late Seral Multistory Closed	Late	2%
Late Seral Open	Late	3%
Non-Forested	N/A	7%

*Watersheds included are the White River Watershed and Upper Badger Creek Subwatershed ** Percent of early seral conditions include recently disturbed areas from the 2020 White River wildfire.

3.10.1.2 Vegetative Conditions at the Site-Specific Scale

3.10.1.2.1 Plant Associations

The project area occurs within the White River Watershed and Upper Badger Creek Subwatershed. The proposed treatment areas are in two different moisture regimes (dry mixed and moist mixed conifer) in ten dominant plant associations. The table below shows approximate acreage per plant association within the project area.

Stand Group	Plant Association	Approximate acres within proposed treatments
A1	Pacific silver fir/vanilla leaf	240
A2	Pacific silver fir/queencup beadlily	6
A3	Pacific silver fir/thinleaf huckleberry/common beargrass	872
A4	Grand fir/vanilla leaf	1955
A5	Grand fir/Oceanspray	468
A6	Douglas fir/Elk sedge	9
A7	Douglas-fir/common snowberry	230
A8	Western hemlock/Vanilla-leaf	180
A9	Mountain hemlock/Queencup beadlily	186
A10	Mountain hemlock/thinleaf huckleberry/common beargrass	1220
	Total	5366

Table 14. Plant associations by acre within the project area

3.10.1.2.2 Forest Structure and Composition

The project area contains a mix of immature and mature stands ranging in age from less than 20 years to over 200 years (reference Table 12). The stand structure is also mixed throughout the project area with most of the project area being in the understory regeneration phase (reference Table 13).

Table 15. Current percent of age class within the project area	Table	15.	Current	percent	of	age	class	within	the	project	area
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Age Class	Percent
< 20 Years	3%
21-40 Years	6%
41-60 Years	8%
61-80 Years	3%
81-120 Years	45%
121-160 Years	24%
161-200 Years	8%
200 + Years	3%

Stand Structure	Seral Stage	Percent of the Project Area
Stand Initiation	Early	15%
Stem Exclusion	Early to Mid	19%
Understory Reinitiation	Mid	43%
Mature Stem Exclusion	Mid to Late	15%
Late Seral Multistory Closed	Late	2%
Late Seral Open	Late	<1%
Non-Forested	N/A	5%

Table 16. Current percent of stand structure within the project area

Stands within the project area are quite varied, with small to large sized trees and quadratic mean diameters (QMD) ranging from as low 2 inches to as high as 19 inches with an average dominant tree height of 84 feet. QMD is the diameter corresponding to the tree of arithmetic mean basal area, or average diameter by basal area (BA). There are isolated stands with larger trees, but these are infrequent and represent a small portion of the project area. Canopy cover averages approximately 62% for the project area. There are approximately 4.2, 18 inch and greater diameter-at-breast-height (DBH) snags per acre and 8.2, 12 inch DBH and greater snags per acre across all dominant plant associations.

3.10.1.2.3 Ecological Processes, Disturbances, and Insects and Disease

Ecological processes and disturbances directly affect the diversity of plant and animal communities within an area over space and time. Ecological processes and disturbances include nutrient and biomass cycling, forest succession (the change in vegetation over time), weather events (i.e., windstorms), insects, pathogens, fire, and human influences (i.e., timber harvest).

Over the last century, there have been broad changes in vegetative conditions in the Cascade Range. The disturbances, or agents of change, influencing vegetation in the project area include fire, diseases, insects and timber harvest. Of these agents, fire and timber harvest have played the most active recent role in the project area, with most of the land base being burned over or harvested at some point after early 1900s. Presently, these regenerated stands tend to be in an overstocked condition (USDA 1995). For a complete description of fire conditions see the Fuels Report which is incorporated by reference and included on the project website. See the Silviculture Report for details about insects and disease and past timber harvesting in the project area.

3.10.2 Direct and Indirect Effects

3.10.2.1 No Action

With no action, there would be no direct effects to the vegetation at the landscape or site-specific scale in the short-term (defined as 50 years from today).

In the long-term, the dry mix conifer stand structure and composition would be dominated by grand fir in the overstory and would remain underdeveloped with low occurrences of ecologically important tree and shrub species in the understory. The stand structure would remain in a two-story dominant stem exclusion type stand. Young stands would continue to grow in densely stocked conditions with little regeneration. The regeneration that would occur would be dominated by shade tolerant tree and shrub species that are less fire-resistant. Densely stocked

stands would continue to have large amounts of small patches with increasing crown closure with little shade intolerant species and minimal structural diversity.

In the long-term, the moist mix conifer stand structure would become dominated by mountain hemlock and pacific silver fir in the overstory, with the development of small patches of ecologically important tree and shrub species in the understory. In unmanaged stands the natural disturbance regime would continue to occur creating small patches of structural diversity. Stand structure would remain in the closed canopy stem exclusion and understory reinitiation phase and move towards a mature stem exclusion type stand.

Ultimately, with no vegetation treatments, the stands would remain in dense overstocked conditions with little understory reinitiation. Vulnerability to insect and disease infestations would remain high and stand density would continue to increase the stands' vulnerability to large scale disturbance. Maintaining high tree density increases both above and below ground competition, creating stress-related mortality. Stems in this environment may continue to grow in height, but diameter growth would stagnate; trees would become more dependent on neighboring trees for support. When stands develop in this manner, they become more susceptible to blow down in large groups, the risk of bark beetle and other insect and disease infestation, and stand replacing events.

QMD would slowly increase over time with little fluctuation. This is indicative of stands stagnating in the stem exclusion stage. QMD should fluctuate over time to reflect the regeneration of smaller diameter trees that contribute to the BA. Tree height would continue to increase but would eventually level out due to competition, lack of growing space, site capacity and resources. See the Silviculture Report section for modeled density measurements.

3.10.2.2 Alternative 1

3.10.2.2.1 Vegetative Effects at the Landscape Scale

The total effects for this project would be minimal at the landscape scale. The total acreage proposed for treatment represents less than 3% of the White River Watershed. Activities would treat a variety of dense dry mix conifer and moist mix conifer plant communities within the project area, moving the overall landscape vegetation towards a condition that would have occurred under natural small and large scale disturbance regimes. The probability of an epidemic level of insect and disease activity across the landscape would be decreased with the density reductions of the thinning activities. Stands would be moved to more historic vegetation composition and stand structure, which would help ensure that key ecosystem elements and processes are sustained. The acres of late seral and mature stand classes would remain very similar after treatment, due to the fact that stands would be thinned from below and would retain the majority of the large overstory trees.

3.10.2.2.2 Vegetative Effects at the Site-Specific Scale

Over the first fifty years after treatment several forest types would be moved from mostly dense, closed canopy stem exclusion and mature stem exclusion stages towards more open less dense conditions, stand reinitiation, or open mature stages in both the moist mix conifer and dry mix conifer plant associations. These conditions would have moderate to low canopy cover with openings large enough to stimulate natural regeneration of shade intolerant tree and shrub species within these types of plant associations. Species diversity in the overstory, seedling, sapling, and shrub layers is essential to the five dominant plant associations mainly present in the treatment areas. However, in the short-term, overstory species diversity would remain limited. Over time as

a diversity of species regenerate and became established, the overstory diversity would increase. With the use of (1 to 2 acre) openings, more shade-intolerant trees and shrubs species could become established.

In variable density thinning, selected trees of all sizes down to saplings (i.e., 3-inches or less in diameter) would be removed. The focus would be on leaving the largest most vigorous, healthiest trees, and favoring shade intolerant, more fire tolerant species. 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). In the long-term (100+ years from today), the stand structure would be moved towards a late multistory closed seral stage within moist mix conifer and moved towards late multi story open seral stage in dry mix conifer.

With vegetation treatments the stand would be less dense with a new mosaic of understory reinitiation. By creating less dense stands with less tree competition, residual trees would benefit from the increased availability of sunlight, nutrients and water. Low stocking levels would result in less volume production, but larger average tree sizes (O'Hara et al. 1995).

See the Silviculture Report section for modeled density measurements.

3.10.2.3 Alternative 2

3.10.2.3.1 Vegetative Effects at the Landscape Scale

Effects at the landscape scale would be the same as described for Alternative 1.

3.10.2.3.2 Vegetative Effects at the Site-Specific Scale

For this alternative, effects would be the same as described for Alternative 1 in areas proposed for VDT and intermediate thinning.

The remaining 289 acres would be treated using the shelterwood method (instead of the VDT treatment described in Alternative 1 for these same acres). All 289 acres are C1/Matrix land. In the shelterwood system, the mature stand is removed in a series of cuts. Regeneration of the new stand occurs under the cover of a partial forest canopy or shelterwood. A final harvest cut removes the shelterwood and permits the new stand to develop in the open as an even-aged stand. This system provides a continuing cover of either large or small trees. It is especially adapted to species or sites where shelter is needed for the new reproduction, or where the shelterwood gives the desired regeneration an advantage over undesired competing vegetation. Shelterwood-treated areas would be moved from mostly dense closed canopy mature multi-storied stand conditions to stand initiation early successional conditions. Stand conditions would be more open in both the moist mix conifer and dry mix conifer plant associations. These conditions would have low canopy cover with openings large enough to stimulate natural regeneration of shade-intolerant tree and shrub species within these types of plant associations. Species diversity in the overstory, seedling, sapling, and shrub layers is essential to the two dominant plant associations within the shelterwood treatment areas. However, in the short-term, overstory species diversity would remain limited. Over time as a diversity of species regenerate and became established, the overstory diversity would increase.

See the Silviculture Report section for modeled density measurements.

3.10.3 Comparison of the Alternatives

The tables below compare the effects of taking no action with the proposed action and shelterwood alternative. Compared to taking no action, both the proposed action and shelterwood alternative would lower the TPA and BA while still increasing stand QMD and height in the immediate term. This would open the canopy allowing for additional growing space in the understory productivity.

In larger openings there would be increased regeneration of shade-intolerant tree species. This would ultimately allow for a new age class of trees to become established increasing the distribution of multi-aged stands within the project area. Over time higher densities would occur in the treatment areas as this new age class develops reducing the QMD in the proposed action over the no action alternative. Lower TPA and BA would also result in stands that would be less vulnerable to large insect and disease outbreaks, due to less competition and stress related mortality.

The shelterwood alternative would provide additional early successional habitat or stand initiation structural stage then both the proposed action and no action alternatives. This structural stage would provide for a more landscape diversity of species composition and structure while also providing defensible space during a large scale event.

Density Measurement	No Action	Alternative 1	Alternative 2
Basal Area (BA)	175	93	85
Trees per Acre (TPA)	361	80	60
Quadratic Mean Diameter (QMD)	10.4	21.0	22.1
Stand Density Index (SDI)	319	133	118
Average Tree Height	83	86	87

Table 17. Summary comparison: Density measurement indicators after treatment

Structural Stage	Existing Condition Percent of the Planning Area	Effect of Alternative 1 Percent of the Planning Area	Effect of Alternative 2 Percent of the Planning Area
Stand Initiation	15%	20%	40%
Stem Exclusion	19%	5%	5%
Understory Reinitiation	43%	50%	37%
Mature Stem Exclusion	15%	10%	5%
Late Seral Multistory	2%	2%	2%
Late Seral Open	0%	8%	6%
Non-Forested	5%	5%	5%

Table 18. Summary comparison: Stand structural stages after treatment

This section has described how the action alternatives meet the purpose and need element of the Grasshopper project described as "to enhance and restore forest diversity, structure, and species composition...". Two other components of the purpose and need are a need to reduce risk associated with high intensity wildfire for both the public and firefighter safety and to provide forest products to help maintain the stability of local and regional economies. The table below compares how the alternatives address these elements of the purpose and need. For a complete description of effects related to wildland fire refer to the Fuels Report which is incorporated by reference and included on the project website.

Purpose and Need Element	Indicator/Measure	Existing Condition	Alternative 1	Alternative 2
Open Defensible	Percent of the Project area in			
Space	Stand Initiation	15%	20%	40%
	Percent of the Project area in either Stem or Mature Stem Exclusion Structure	34%	15%	10%
Forest Products	Estimated Volume (MMBF)	0	19.8	21.4

Table 19. Summary Comparison: How the alternatives address other purpose and need elements

3.10.4 Cumulative Effects

The interdisciplinary team listed projects and activities that should be considered in the cumulative effects analysis and then analyzed those projects and activities relevant to each resource. The spatial context used for the cumulative effects analysis for silviculture was the White River Watershed for the landscape scale and the project area for the site-specific scale. The temporal context includes past, ongoing, or future activities which overlap in time and space that have potential to modify stand structural characteristics.

3.10.4.1 Cumulative Effects at the Landscape Scale

The existing vegetative condition at the landscape scale is a direct reflection of all previous activities and serves as the baseline for the effects determination. This includes all past and ongoing activities. Timbered stands within this land base are managed for a variety of reasons from wildlife habitat to timber production. It is anticipated that management and harvest on and off federal lands would continue as previously observed. Due to these activities the overall watershed vegetative condition is anticipated to remain relatively consistent throughout time.

3.10.4.2 Cumulative Effects at the Site-specific Scale

The existing vegetative condition at the site-specific scale is a direct reflection of all previous activities and serves as the baseline for the effects determination. This includes all past and ongoing activities. There are no other ongoing or future proposed activities at the stand or project area level which would impact the vegetative resource at this scale. As such there are no direct or indirect effects to consider cumulatively beyond those directly associated with proposed activities.

3.10.5 Forest Plan Consistency and Other Management Direction

3.10.5.1 National Forest Management Act (NFMA)

Both action alternatives are consistent with NFMA. As required by regulations (FSH 1909.12 5.31a), "all proposals that involve vegetative manipulation of tree cover for any purpose must comply with the seven requirements found at 36 CFR 219.27(b)." All of these requirements are met by the project. See the project record.

Stands proposed for harvest treatment were examined for suitability in accordance with 36 CFR 219.13. Stands were found to be suitable for timber management based on the following:

- Areas proposed for treatment meet the definition of forest land (36 CFR 219.19);
- Technological feasibility exists to ensure soil productivity and watershed protection. All sites considered for treatment would use established harvesting and site preparation methods. In combination with resource protection standards in the Forest Plan and applicable Best Management Practices, these methods would be sufficient to protect soil and water resource values;
- There is reasonable assurance that lands could be restocked within 5 years of final harvest.

3.10.5.2 Special Roadless Area Conservation Rule of 2001: Inventoried Roadless Areas

All proposed treatments within Inventoried Roadless Areas (IRA) would be consistent with the Roadless Area Conservation Rule (RACR) exception §294.13(b)1(ii). Approval for this exception was received from the Deputy Regional Forester in 2019. Treatments would take place on approximately 272 acres of Inventory Roadless Area (IRA). Both alternatives propose thinning of less than 14 inch diameter material within IRA to open the stands and reduce stocking levels. These conditions would create more healthy growing conditions for the residual trees while providing growing space for more fire tolerant trees species to establish. More open stand conditions will allow for the reintroduction of low intensity fire as the major disturbance regime while also mitigating risk of a large scale stand replacing event. The cutting and removal of generally small diameter timber would occur to improve ecosystem composition, stand structure, and reduce risk of uncharacteristic wildfire.

3.10.5.3 2009 Omnibus Public Law 111-11: National Recreation Areas

Both action alternatives are consistent with the 2009 Omnibus Public Law 111-11 (the Act). Both alternatives include thinning activities within the NRA that would focus on moving existing stands of timber towards more historic species composition and structural conditions by opening the stand and reducing stocking levels. These activities would create healthy growing conditions for current residual tress while providing growing space for shade intolerant species and additional age classes to establish. Restoration of stand composition and structure for ecosystem and forest health is permitted within the NRA.

3.10.5.4 Mt. Hood Land and Resource Management Plan (Forest Plan)

Both action alternatives propose treatments which are consistent with Forest Plan standards, including those standards relevant to even-aged and uneven-aged management, regeneration harvest, and reforestation. See section 3.3 of the Silviculture Report for details.

3.11 Soils

This section summarizes the effects analysis that is documented in the Soils Report which is incorporated by reference and included on the <u>project website</u>. In summary, effects of both action alternatives would be consistent with Forest Plan standards and guidelines for soil productivity.

3.11.1 Existing Conditions

3.11.1.1 Detrimental Soil Conditions

The current extent of detrimental soil conditions (DSC) is low. The table below shows soil condition classes. Currently, conditions in all of the units proposed for treatments are consistent with the Forest Plan standards FW-022 and 023 for soil productivity.

Table 20. Soil condition classes of areas proposed for treatment*

Soil Condition Class	% Units
Soil Condition Class 1 (0-5% detrimental soil conditions)	87%
Soil Condition Class 2 (5-10% detrimental soil conditions)	13%
Soil Condition Class 3 (>10% detrimental soil conditions)	0%

*All percentages are approximate.

3.11.1.2 Soil Erosion Hazard Class

Nearly all of the acreage proposed for treatment is categorized to be in the slight to moderate soil erosion hazard class as defined by the Forest Plan. The table below shows soil erosion hazard classes. Currently, conditions in all of the units proposed for treatments are considered to be consistent with Forest Plan standard FW-025 for effective ground cover and soil productivity.

Table 21. Soil erosion hazard classes of areas proposed for treatment *

Treatment Area	Slight to Moderate	Mod-Severe	Severe to Very Severe	Not Rated (rock outcrops, etc)	
% Project Area	84%	15%	0%	1%	

All percentages are approximate.

3.11.1.3 Surface Organic Matter

Although the total amount of surface organic matter is considered to be sufficient, the diversity of the types and sizes varies from unit to unit and, in some cases, the quality and amounts of downed coarse woody debris (CWD) is below Forest Plan standards (e.g. FW-033). The majority of sapling plantations are still developing and frequently lack suggested quantities of larger size classes of CWD, whereas the majority of unmanaged stands meet or exceed Forest Plan standards for the quality and abundance of CWD. Across all stands, the recruitment potential for CWD is high and nutrient cycling is considered to be properly functioning.

3.11.2 Direct and Indirect Effects

3.11.2.1 No Action

Under the No Action alternative, ground-disturbing activities related to proposed activities would not occur. Other than the extent of existing detrimental soil conditions, soil quality across the majority of the project area would remain in good condition despite the level of prior management. Natural recovery from past impacts would slowly continue to occur unabated. The ability to enhance growth and capitalize upon inherent soil productivity through active timber management would not be captured. Soil productivity would continue to be heavily utilized to support the dense quantity of stems, and resilience under-utilized for enhanced structure development. Road maintenance would likely not occur in the near-term, and therefore accelerated erosion would continue during periodic runoff events from certain road segments.

3.11.2.2 Action Alternatives

3.11.2.2.1 Detrimental Soil Conditions

Effects of proposed activities on detrimental soil conditions relate to logging systems used, temporary roads, and use of heavy equipment off-road. Post-treatment restorative actions, such as scarification of landings and temporary roads, would help ensure a relatively rapid recovery of productive soil characteristics. In units where mechanical fuels treatments and variable density thinning are proposed, the heaviest ground effects would be concentrated to the skidding network. PDC would limit mechanical travel across most of the unit areas so that impacts would be minimal and short term.

Long term impacts due to displacement of the surface mineral horizons could be expected where primary skid trails and landings are located. The rocky soils in the project are considered to be resistant to heavy compaction and can recover from minimal disturbance. Displacement of topsoil will likely have longer term effects and not recover rapidly. Displacement occurs most notably when soil moisture is at its lowest. Project design criteria that limit the extent and timing of ground-based mechanical operations are intended to minimize soil displacement and heavy compaction. PDC is expected to maintain soil conditions that would be consistent with Forest Plan standards.

3.11.2.2.2 Soil Erosion Hazard Class

Reduction of ground cover can affect existing soil erosion hazard class and PDC are prescribed to minimize loss of groundcover. The risk to soil erosion would be highest in areas where effective ground cover is reduced to a notable degree, exposing the soil surface to erosion from rain drop impacts and in areas of higher slope. Soil erosion could be expected where impacts to the soil surface would be compacted and displaced in the skidding network. PDC would maintain effective ground cover and minimize displaced and compacted soil as consistent with Forest Plan standards.

3.11.2.2.3 Surface Organic Matter

Surface organic material would be disturbed in portions of units throughout the planning area. The extent of disturbance would be limited by PDC. Tree removal would decrease total on-site biomass for a short time. In units where fuels reduction treatments occur, the immediate influx of fine organic inputs would be further increased in the long term. PDC would retain snags and existing larger diameter downed CWD on-site wherever feasible, and skips would serve to provide for future recruitment of CWD in VDT units where prescribed. The total amount of surface organic matter to remain after treatment would be sufficient for supporting the function of soil biota that facilitate site productivity. The distribution of the types and sizes of surface organics would be re-apportioned, particularly from the canopy to the forest floor. This re-apportioning of organics would be most pronounced in units receiving heavy thinning or shelterwood treatment. While fine organic material may be abundant post treatment, approximately half of these stands are currently estimated to be below Forest Plan standards (FW-033) for abundance and distribution of larger diameter CWD and those conditions would continue

to persist in the short-term. On average, across the project area, forest response to thinning would correlate to an increase of growth and the production and storage of future available CWD in larger diameter classes. In the long-term, growth would become more balanced with mortality, and the eventual source of CWD from the residual stand more consistent. The amount of biomass on the ground and stored in the standing live trees would remain abundant, and serve as a long-lasting source of surface organic matter in the treatment units. Organic substrate supporting the proliferation and functionality of soil biota would likewise continue, perpetuating long-term site productivity. PDC would ensure Forest Plan consistency by maintaining surface organic matter across the project area.

3.11.3 Cumulative Effects

The interdisciplinary team listed projects and activities that should be considered in the cumulative effects analysis and then analyzed those projects and activities relevant to each resource. Current measurable soil disturbance in the project area has been mostly caused by human disturbance and, to a lesser degree, fire. Past and ongoing human activity has the most measurable impact on the soil within the project area. Most of the proposed treatments would enter stands that have been treated previously. For this reason, the potential for cumulatively accruing detrimental soil conditions is likely. Treatment units that exhibit Soil Condition Class 2 would be at the greatest risk, where containment of detrimental soil effects could be a challenge to limit. Coordination between Forest contract administrators, resource specialists, and operators to implement BMPs/PDC would mitigate the extent of detrimental soil impacts. The current analysis shows cumulative impacts would not lead to exceeding the LRMP Forestwide S&G for effective ground cover and soil productivity.

3.11.4 Forest Plan Consistency and Other Management Direction

Proposed activities as planned would be consistent with law, regulation and policy including the Forest Plan standards and guidelines for soil productivity (FW-022 to FW-037) and Northwest Forest Plan standards and guidelines (C-40, C-44). PDC and best management practices would be employed during implementation to achieve consistency.

3.12 Transportation

This section summarizes the effects analysis that is documented in the Transportation Report which is incorporated by reference and included on the <u>project website</u>. **In summary, both action alternatives would benefit the transportation resource**.

3.12.1 Existing Conditions

The majority of roads within the analysis area are Operational Maintenance Level 2 and generally have a pattern of use common to other Operational Maintenance Level 2 roads on the Mt. Hood National Forest. Peak use occurs in the summer and early fall with the influx of administrative, commercial, and recreational traffic. Overall, the condition of roads within this planning area are in fair, moderate, or poor shape.

3.12.2 Direct and Indirect Effects

3.12.2.1 No Action

Heavy haul of commercial wood fiber is the most impactful action on the transportation resource. Without commercial haul, less traffic-generated wear and tear on the roads within the project boundary would occur. Wear and tear that would come from recreation and administrative use would continue to occur; normally from passenger vehicles. Since use would continue to occur on existing poor condition roads, there would be a longer term detrimental impact to the transportation resource because current maintenance and reconstruction needs would not be addressed. Lack of road maintenance and reconstruction would result in a negative effect with respect to both safety and the environment. Current road failures, drainage failures, and erosion control problems that have been identified within this road system would continue to persist. Road densities and road use designations would both remain unchanged with no action.

3.12.2.2 Action Alternatives

While heavy haul of materials is the most impactful action regularly applied to the transportation resource, all roads used for haul would receive some type of road maintenance and the majority of roads used for haul would receive some type of reconstruction work that is considered beyond the definition of maintenance. The project would be implemented in an economically viable way because value of the timber removed in this project is likely to be sufficient to cover repair and maintenance costs. Government sources of rock products in the local area would be the preferred method of supply for crushed surface or base aggregates. No new road construction would occur in Inventoried Roadless Areas (IRAs). Road maintenance or reconstruction may occur, if necessary and as approved by the Regional Office, on the section of Forest System Road 4860000 which exists in an IRA.

Both action alternatives propose the same road status changes for some system roads. Sitespecific treatments would be tailored to site-specific conditions using one or more closure methods or treatments.

These road status changes are informed by the recommendations from the 2015 Travel Analysis Report (TAR) (USDA 2015) and serve to move the Forest transportation system toward its desired future condition. There are certain instances, however, where the proposed action deviates from past management decisions or the TAR recommendations based on an analysis of the site-specific conditions.

The 4810225 road was determined to be "likely needed" in the TAR. Upon further analysis during this project, the team hydrologist documented drainage and stability issues as well as the road was overgrown due to limited to no use by the public and administrative. Upon further review with the team, it was determined that this road was no longer needed in the future for administrative purposes. The team recommended to decommission this road. Details about other roads are shown in Appendix C.

The table below is a summary of the miles of road with status changes within the project area that would result from either Alternative 1 or Alternative 2. Please refer to the Transportation Report for details of all roads analyzed.

Road Status	Approximate miles
Change from open to close	1
Change from current status to decommission	0.4
Change from current status to ML2 Admin Use Only	0.5
Change from ML1 to ML2	1

Table 22. Action alternatives road status changes

3.12.3 Cumulative Effects

Cumulatively, the transportation system would recognize an improvement over time as with maintenance levels set by the proposed action, road maintenance, reconstruction and culvert replacements occur. The analysis area for cumulative effects includes the Forest Service system roads within the project area and the Forest Service system haul roads outside the planning area. The analysis period for the cumulative effects considered activities taking place over the next three years including activities authorized by the Rocky Restoration Decision and the 2018 Forest-Wide Aquatic Organism Passage Restoration Decision Memo.

3.12.4 Forest Plan Consistency and Other Management Direction

Proposed activities have been reviewed for consistency with the Mt. Hood Forest Plan. Proposed activities include PDC that ensure consistency with Forest wide Transportation Standards and Guidelines; FW-407 through FW-437, FW-451, and FW-452, pages Four–95 through Four–97. This project is also consistent with the LUA standards for transportation under A5, A6, and C1. Lidar data have confirmed there are no existing roads currently in the A5 land use allocation. Only roads in land allocations which allow road use will be used. No new roads are proposed in any land use allocation including A5, A6, and the Mt Hood National Recreation Area and Inventoried Roadless Areas. Within the A5 (unroaded recreation) land use allocation, no roads would be used and no temporary roads would be built because the A5 LUA overlaps with the National Recreation Area. Material treated within the A5 LUA would be yarded or skidded out to roads in other LUAs where road use for this project is appropriate (i.e. A6 or C1). The Forest-wide Roads Analysis (USDA, 2003) and the project specific transportation analysis documented in this report implements guideline FW-416. All system road decommissioning decisions would be made following the guidance provided under FW-432.

3.13 Wildlife

This section summarizes the effects analysis that is documented in the Wildlife Report which is incorporated by reference and included on the <u>project website</u>. Species that are not present within the project area or do not have habitat within the project area were not analyzed. Survey and Manage wildlife species are not present within the project area.³ **Proposed activities have different effects for different species. Effects are summarized below. Unless otherwise noted, effects are the same for activities proposed by both Alternative 1 and Alternative 2.**

Federally Threatened, Endangered or Proposed Species

- Northern spotted owl Both action alternatives **may affect and are likely to adversely affect (LAA)** spotted owl by habitat impacts. Alternative 2 would further reduce canopy cover and delay the attainment of suitable habitat by as much as 75 to 100 years compared to Alternative 1.
- Northern spotted owl Critical Habitat Both action alternatives may affect and are likely to adversely affect (LAA) critical habitat by impacts to nesting, roosting and foraging habitat. Effects are the same for both action alternatives because there are no shelterwood treatments proposed in Critical Habitat for the Northern Spotted Owl.

³ The Dalles sideband was found in some units during surveys and those units have subsequently been dropped.

• *Gray Wolf* - Both action alternatives **may affect but are not likely to adversely affect** (NLAA) gray wolves.

Region 6 Sensitive Species

• There are five Region 6 Sensitive Species that are or may be present in the planning area: *White-headed woodpecker, Fringed myotis, Western bumblebee, Suckley's cuckoo bumblebee* and *Johnson's hairstreak.* For all species, activities **may impact individuals, but would not likely contribute to a trend towards federal listing or cause a loss of viability of the population or species.**

Management Indicator Species

• Other than the Northern Spotted Owl which was analyzed for separately, there are five Management Indicator Species that are or may be present in the planning area: *Mule deer and elk, Pileated woodpecker, American marten, Wild turkey,* and *Western gray squirrel.* For these species, activities would not contribute to a negative trend in viability.

Other required analysis

- Snags and Down Wood Both action alternatives would result in lower levels of snag recruitment compared to no action. Alternative 2 would recruit slightly less snags than Alternative 1. Down wood would be maintained where possible. The current conditions at the watershed level would remain unchanged.
- *Migratory Birds* Effects include a combination of beneficial, neutral, and negative impacts depending on the species.

3.13.1 Northern Spotted Owl

This section describes effects to the Northern Spotted Owl and certain habitat components. Section 3.13.2 of this EA and section 3.0 of the Wildlife report describe effects specifically for Critical Habitat for the Northern Spotted Owl.

3.13.1.1 Existing Conditions

Spotted owls generally rely on older forested habitats that contain the structures and characteristics required for suitable (nesting, roosting, foraging) habitat and dispersal habitat. There are 3,035 acres of dispersal habitat and 12,882 acres of suitable habitat in the 28,786-acre analysis area for spotted owls (all acres are approximate). There are seven historic home ranges that overlap analysis area for the Grasshopper analysis area. Of these 7, only 5 overlap with units identified for proposed treatments. Of the 272 acres proposed for treatment within Inventoried Roadless Areas, 124 are currently suitable habitat and 33 are dispersal habitat. The remaining acres are not currently providing habitat for spotted owls.

3.13.1.2 Direct and Indirect Effects

The analysis area for spotted owl includes the project boundary plus a 1.2-mile buffer. If no action were taken there would be no short term effects. Many of the stands currently providing dispersal habitat would grow into low quality suitable habitat in the next 75 to 100 years. After 200 or more years, these stands would function similar to a thinned stand but may have a greater number of snags and down wood. The potential impacts to habitat from wildfire, insects, or disease are greater under the No Action Alternative.

For both action alternatives, effects from disturbance including heavy equipment use, chainsaws, and helicopters **may affect but are not likely to adversely affect (NLAA)** northern spotted owls because of project design criteria. For both action alternatives, activities that downgrade suitable habitat on 1,223 acres and remove habitat on 11 acres **may affect and are likely to adversely affect (LAA)** spotted owl. Treatment activities that remove dispersal habitat on 610 acres are **not likely to adversely affect (NLAA)** spotted owl. Acres include Inventoried Roadless Areas, where treatments would downgrade 57 acres of suitable, maintain 67 acres of suitable, and remove 33 acres of dispersal habitat within IRA. Because fuel treatment activities have the potential to temporarily impact prey species, these activities **may affect and are likely to adversely affect (LAA)** spotted owl. Given that up to 4.0 acres of suitable habitat could be removed, temporary road construction **may affect, and is likely to adversely affect (LAA)** spotted owl. The removal of dispersal habitat for road construction **may affect and is not likely to adversely affect (NLAA)** spotted owl.

The direct and indirect effects of Alternative 2 are the same as those described in Alternative 1 with an exception to the amount of suitable habitat removed. Alternative 2 would remove 267 acres more suitable habitat than Alternative 1. The removal of suitable habitat, rather than downgrading it to dispersal, would increase the time in which late successional characteristics would be attained on these 267 acres by as much as 75 to 100 years compared to Alternative 1. All core areas and home range percentages would be the same as those analyzed under Alternative 1. All effects determinations for Alternative 2 are the same as Alternative 1.

3.13.1.3 Cumulative Effects

Past timber harvest on the Mt. Hood National Forest and adjacent lands under other ownership was considered in this cumulative effects' analysis for projects in the past, present, and foreseeable future that overlap the analysis area in time and space. Past timber harvest on federal land have reduced the amount of suitable habitat on the landscape and this habitat loss will remain on the landscape into the future until these stands grow over time and become suitable again which could be 100 or more years. Private lands are not expected to provide suitable habitat in the long-term as they are not managed for spotted owl. The White River Fire (2020) and post-fire activities were also considered in the cumulative effects analysis. Snags and down wood levels would remain relatively unchanged when considered at the watershed scale post-fire. See section 3.13.5 for more information about snags and down wood. The cumulative effects to dispersal habitat would not prevent spotted owls from dispersing throughout the analysis area. The private land to the south and east is not providing for dispersal of spotted owl. Owls would continue to be able to disperse north and west across the Forest.

3.13.1.4 Management Direction

Proposed activities are consistent with Forest Plan Standards and Guidelines that pertain to species protected by the Endangered Species Act. The proposed project is consistent with the Northwest Forest Plan and with the Revised Northern Spotted Owl Recovery Plan (USFWS 2011). The proposed project is consistent Recovery Action 10 because it maintains spotted owl sites and the highest quality habitat within the planning area. High quality, Recovery Action 32 stands would be maintained with suitable and dispersal between these stands for habitat connectivity.

The proposed action was consulted on under the formal programmatic: Biological Opinion on Mt. Hood National Forest Timber Harvest and Routine Activities (USFWS 20, Ref # 01EOFW00-2020-F-0169).

3.13.2 Northern Spotted Owl Critical Habitat

3.13.2.1 Existing Conditions

The stand scale was utilized to assess effects for all four physical and biological features, or PBFs, that characterize critical habitat for the spotted owl: PBF 1 is the forest types that support spotted owls. PBF 1 must be in concert with at least one other PBF to be critical habitat (PBFs 2, 3, and 4 are nesting/roosting, foraging, and dispersal habitat, respectively). Of the 5,360 acres proposed for treatment there are approximately 4,428 acres of critical habitat. Of the 20,024 acres of critical habitat (PBF 4) and 10,037 acres are providing suitable habitat for spotted owls (PBF 2, 3 and 4). The remaining 4,273 acres are considered non-habitat and are mostly providing PBF 1. These PBFs in the action area are functioning at a landscape scale and could support up to 7 territories.

3.13.2.2 Direct and Indirect Effects

The analysis area for spotted owl includes the project boundary plus a 1.2-mile buffer. If no action were taken there would be no short term effects. Units that are providing dispersal (PBF 4) and suitable habitat (PBF 2) would continue to function as such. In the long-term, the stands that are currently considered non-habitat for spotted owls would likely become dispersal habitat. Some of the stands may eventually develop nesting habitat characteristics and become suitable spotted owl habitat which could take as much as 60 to 150 years. The potential impacts to critical habitat from wildfire, insects, or disease are greater under the No Action Alternative.

Effects are the same for both action alternatives because there are no shelterwood treatments proposed in Critical Habitat for the Northern Spotted Owl.

Removal of 610 acres of PBF 4 habitat on 610 acres **may affect**, **and is not likely to adversely affect (NLAA)** spotted owl critical habitat. Activities that downgrade PBFs 2 and 3 on 1,181 acres **may affect**, **and is likely to adversely affect (LAA)** spotted owl critical habitat. Because fuel treatment activities have the potential to remove some components of PBF 3 in the short-term, these activities **may affect and are likely to adversely affect (LAA)** spotted owl critical habitat. Given that up to 3.3 acres of PBF 2 could be removed, temporary road construction **may affect**, **and is likely to adversely affect (LAA)** spotted owl critical habitat. The removal of dispersal habitat for road construction **may affect and is not likely to adversely affect (NLAA)** spotted owl critical habitat.

3.13.2.3 Cumulative Effects

The following list of projects in the past, present, and foreseeable future overlap the analysis area in time and space and were considered in this cumulative effect's analysis: past timber harvest on federal land, OHV trail construction and maintenance and the White River Fire and post-fire projects. Private lands are not Critical Habitat (CH) and were therefore not considered in the cumulative effect's analysis. Timber harvest on federal land and utility corridor maintenance have reduced the amount of suitable habitat (PBF 2) on the landscape and will continue to do so into the future. Utility corridors are not expected to provide suitable habitat as they are not managed for spotted owl CH. Timber harvest on federal land have reduced the amount of all 4 physical and biological features (PBFs) until these stands grow over time and become suitable habitat again. The cumulative effects to dispersal habitat (PBF 4) would not prevent spotted owls from continuing to forage or disperse throughout the analysis area. The private land to the east is not providing for dispersal of spotted owl and is at the far eastern portion of the species range. The White River Fire (2020) and post-fire activities were also considered in the cumulative effects

analysis. Snags and down wood levels would remain relatively unchanged when considered at the watershed scale post-fire. See section 3.13.5 for more information about snags and down wood. Owls would be able to disperse north and west across the Forest. The Forest Service land directly south of the planning area is within the Rocky burn and is not currently providing dispersal habitat.

3.13.2.4 Management Direction

Proposed activities are consistent with the special management considerations or protections as identified for the East Cascades Critical Habitat Unit ECN-7 in the Final Critical Habitat Rule. The proposed action was consulted on under the formal programmatic: Biological Opinion on Mt. Hood National Forest Timber Harvest and Routine Activities (USFWS 20, Ref # 01EOFW00-2020-F-0169).

3.13.3 Gray Wolf

3.13.3.1 Existing Conditions

Wolves in Oregon west of Hwy 395 remain protected by the federal Endangered Species Act. The U.S. Fish and Wildlife Service (FWS) is the lead management agency for wolves west of Hwy 395, including those that may be on the Mt. Hood National Forest. Most wolves occur in northeastern Oregon, and four areas of know wolf activity now occur in the western part of the state. No dens or rendezvous sites have been detected within the project area.

3.13.3.2 Direct and Indirect Effects

Proposed activities of both action alternatives **may affect**, **but are not likely to adversely affect (NLAA) gray wolf.** The analysis area for gray wolves included the planning area boundary and a one-mile buffer. Under the no action alternative there would be no increase in human activities in the area. Thinning activities that would increase forage for deer and elk would not take place. Both action alternatives would have the same effects on gray wolves. Project related activities would increase human presence during implementation and this may cause wolves to temporarily avoid the area. Thinning activities would increase forage for deer and elk; therefore activities could indirectly benefit the gray wolf by increasing the availability of prey within in the planning area. While the proposed action may cause wolves to temporarily avoid the area during project implementation, project design criteria would limit disturbance within one mile of a den or rendezvous site.

3.13.3.3 Cumulative Effects

The cumulative effects analysis considered past, present, and foreseeable future activities overlapping in time and space including timber harvest on federal lands, road decommissioning and road closures, pre-commercial thinning, and recreational use. Cumulative effects include positive and negative impacts. The cumulative effects analysis supports the determination of **may affect**, **but are not likely to adversely affect (NLAA) gray wolf.**

3.13.3.4 Management Direction

Activities proposed by both action alternatives are consistent with all relevant Forest Plan Standards and Guidelines. Consultation occurred under the formal programmatic: Biological Opinion on Mt. Hood National Forest Timber Harvest and Routine Activities (USFWS 20, Ref # 01EOFW00-2020-F-0169).

3.13.4 Region 6 Sensitive Species

3.13.4.1 Existing Conditions

Sensitive species with suitable habitat within the project area include the white-headed woodpecker, fringed myotis, western bumblebee, Suckley's cuckoo bumblebee, and Johnson's hair-streak. Information about life history, distribution, and habitat for each species can be found in the Wildlife Report.

3.13.4.2 Direct and Indirect Effects

For all species (white-headed woodpecker, fringed myotis, western bumblebee, Suckley's cuckoo bumblebee, and Johnson's hair-streak), both action alternatives **may impact individuals but would not likely contribute to a trend towards federal listing or cause a loss of viability of the population or species.** Effects specific to each species are summarized below.

White-headed woodpecker

Under the no action alternative, habitat would remain limited and the number of white-headed woodpeckers in the analysis area would continue to be lower than historic levels. Vegetative and fuel treatments proposed by both action alternatives in ponderosa pine and oak habitat would benefit white-headed woodpeckers. Some treatment areas in ponderosa pine would go from marginally suitable to highly suitable.

Fringed myotis

Under the no action alternative, fringed myotis roosting and foraging habitat would not be impacted. Activities proposed by both action alternatives would have no impact on hibernacula or mines since these habitats are not in the project area. Vegetative and fuel treatments proposed by both action alternatives would improve foraging habitat.

Western bumblebee and Suckley's cuckoo bumblebee

Under the no action alternative, there would be no direct impacts to bumblebee habitat. There would be fewer flowering plants for foraging in the long-term since canopies would remain closed. Activities proposed by both action alternatives may temporarily impact food sources and nesting sites. Adjacent untreated areas would continue to provide food sources and habitat. A slight reduction in the number of bees in the project area would be temporary as flowering shrubs and nest sites increase within a few years after treatments. In the long term bumblebees would benefit from an increase of nectar plants.

Johnson's hairstreak

Under the no action alternative, there would be no impact to the species. Activities proposed by both action alternatives could impact the larval stage of Johnson's hairstreak by removing large trees with mistletoe. Trees with mistletoe would not be directly targeted by this project. Mature forest structure would remain within treated and adjacent untreated stands. A slight reduction in the number of butterflies in the project area would be temporary as flowering shrubs increase within a few years after treatments.

3.13.4.3 Cumulative Effects

For all species, the cumulative effects analysis considered past, present, and foreseeable future activities overlapping in time and space. For the gray wolf, this included timber harvest on federal lands, road decommissioning and road closures, pre-commercial thinning, and recreational use.

For the white-headed woodpecker, this included timber harvest on federal land, pre-commercial thinning, and fire suppression. For the fringed myotis, this included timber harvest on federal land, pre-commercial thinning, hazard tree removal, and campsite operations and maintenance. For the bumblebees, this included road decommissioning, road closures, pre-commercial thinning, noxious weed treatments, and livestock grazing. For the Johnson's hairstreak, this included road decommissioning, road closures, pre-commercial thinning, and noxious weed treatments. For all species the cumulative effects analyses support the determination that activities **may impact individuals but would not likely contribute to a trend towards federal listing or cause a loss of viability of the population or species.**

3.13.4.4 Management Direction

Proposed activities are consistent with the following Standards and Guidelines for sensitive species: FW-174: Threatened, endangered and sensitive plants and animals shall be identified and managed in accordance with the Endangered Species Act (1973), the Oregon Endangered Species Act (1987), and FSM 2670; and, FW-175: habitat for threatened, endangered and sensitive plants and animals shall be protected or improved.

3.13.5 Management Indicator Species

3.13.4.1 Existing Conditions

Management Indicator Species within the project area include northern spotted owl, mule deer (deer) and elk, pileated woodpecker, American marten, wild turkey, and western gray squirrel Information about life history, distribution, and habitat for each species can be found in the Wildlife Report. Effects for the northern spotted owl are discussed in section 3.13.1 and are not discussed in this section.

3.13.5.2 Direct and Indirect Effects

For mule deer (deer) and elk, pileated woodpecker, American marten, wild turkey, and western gray squirrel, activities associated with both action alternatives **would not contribute to a negative trend in viability.** Effects specific to each species are summarized below.

Mule deer and elk

Under the no action alternative, human disturbance within the planning area would remain the same and thermal and hiding cover would remain the same. No forage habitat would be created in the short term and forage habitat would be reduced within the watershed in the long-term. Road densities would remain unchanged. Proposed treatments would benefit deer and elk by increasing forage in some stands and reducing open road densities by closing or decommissioning approximately 2 miles of roads. Timber removal, road maintenance, temporary road construction, and sale area preparation activities could potentially disturb animals in the area at the time of implementation. Potential disturbance would be small in scale and temporary in nature. No activities are proposed on the B10 Land Use Allocation in the analysis area. Alternative 2 effects would be the same except that stands would be opened to a greater degree on approximately 289 acres compared to Alternative 1, providing better forage for approximately 25 years compared to Alternative 1.

Pileated woodpecker

Under the no action alternative, there would be no short term impacts to pileated woodpeckers. Suitable pileated woodpecker habitat could take as long as 60 to 150 years to develop. Proposed

sapling treatments would have long term benefits to habitat. Timber harvest has the most notable effect on habitat for the pileated woodpecker. The best suitable habitat for pileated woodpecker in the western portion of the planning area is being maintained and is not within treatment units. Snags and down logs would be maintained according to Forest Plan Standards and Guidelines. (For details about effects to snags and down wood see section 3.13.5 in this EA and section 14.0 of the Wildlife Report.) Effects of Alternative 2 are the same as those described in Alternative 1 except for within shelterwood treatment areas, where canopy covers would be reduced to between 20 and 30 percent on approximately 289 acres. This canopy cover reduction would increase the time in which late successional characteristics would be attained on these acres by as much as 75 to 100 years compared to Alternative 1. Large snag levels would be the same as Alternative 1. There would be fewer small snags recruited over the next 100 years.

American marten

Under the no action alternative, there would be no short term impacts to marten. Suitable marten habitat could take as long as 60 to 150 years to develop. Proposed sapling treatments would have long term benefits to habitat. At least 160 acres of mature or old growth forest within the 320-acre B5 management unit would be maintained and all treatments within B5 would maintain a canopy cover of 50 percent in commercial units. The best suitable habitat for American marten in the western portion of the planning area is being maintained and is not within treatment units. This B5 area was retained specifically for American marten by the Forest as directed by the White River Watershed Analysis. No other B5 units were retained in the analysis area. Snags and down logs would be maintained according to Forest Plan Standards and Guidelines. (For details about effects to snags and down wood see section 3.13.6 in this EA and section 14.0 of the Wildlife Report.) Effects of Alternative 2 are the same as those described in Alternative 1 except for within shelterwood treatment areas, where canopy covers would be reduced to between 20 and 30 percent on approximately 289 acres. This canopy cover reduction would increase the time in which late successional characteristics would be attained on these acres by as much as 75 to 100 years compared to Alternative 1. Large snag levels would be the same as Alternative 1. There would be fewer small snags recruited over the next 100 years.

Wild turkey

Under the no action alternative, there would be less forage and hiding cover available for wild turkey and this habitat would further be reduced. Proposed activities would benefit wild turkey by opening ponderosa pine stands and providing suitable foraging, nesting, brood-rearing, and roosting cover. The mix of habitats enhanced would increase the number of turkeys that the planning area could support.

Western gray squirrel

Under the no action alternative, western gray squirrel would continue to have an abundance of nesting and foraging habitat however benefits associated with more open conditions would not increase. Proposed activities would have both negative and beneficial impacts to western gray squirrels. Activities may result in lower mychorrhizal fungi production which is an important food source for this species. At the same time, thinning activities would provide more open conditions that would increase acorn and pine seed production which is also a food source.

3.13.5.3 Cumulative Effects

For all species, the cumulative effects analysis considered past, present, and foreseeable future activities overlapping in time and space. For mule deer and elk, this included road decommissioning, road closures, recreational use, pre-commercial thinning, and timber harvest on

Forest and private lands. For pileated woodpecker and American marten, this included timber harvest on the Mt. Hood National Forest and adjacent lands under other ownership. For wild turkey and western gray squirrel, this included timber harvest and cattle grazing on Forest Service lands. For all species, the cumulative effects analyses support a determination that activities **would not contribute to a negative trend in viability.**

3.13.5.4 Management Direction

This project is is consistent with The National Forest Management Act which 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."

3.13.6 Snags and Down Wood

3.13.6.1 Existing Conditions

Across the Mt. Hood National Forest, snags and downed wood are found at lower levels than the historic range of variability. The White River Watershed was analyzed for historic and current snag levels since stand level analysis does not provide a meaningful measure to snag and down wood dependent species. The analysis was further broken down by stand structures; Eastside mixed conifer and Moist mix conifer. Management for snags and down wood are compared to unharvested stands, which represent historic conditions. The project area contains stands of immature plantations less than 80 years old and recently unmanaged stands over 80 years old in the wildlife habitat type (WHT) of Eastside Mixed Conifer in the eastern portion of the planning area and Montane Mixed Conifer in the western portion as defined in DecAID. For more information about DecAID and tolerance levels, refer to the Wildlife report.

3.13.6.2 Direct and Indirect Effects

The analysis area includes the White River Watershed. Under the no action alternative, in the short term, plantations would provide low amounts of down wood cover. Over next 70 years, these stands would continue to experience increased stand density and become increasingly more susceptible to natural mortality agents and would recruit new snags and down logs, mainly from the smaller intermediate and suppressed trees. The No Action Alternative would have no direct, indirect, or cumulative effects on snag and down wood in the project area. For comparison purposes, taking No Action would likely provide more snags overall at maturity than the Action Alternatives.

Implementation of either action alternative could result in the loss of some snags cut for safety concerns. No snags are proposed to be cut as part of the proposed action and large snags that need to be cut would remain nearby as down wood. Existing large down wood would be retained. Alternative 1 would have fewer snags and less down wood than taking no action, however there would be no meaningful impact at the watershed scale and there would be sufficient quantities in units and across the landscape to provide for the needs of dependent species over time. The impacts to snags and down wood from treatments under Alternative 2 would be the same as those for Alternative 1 except for the potential to recruit slightly fewer snags and slightly fewer down logs in the shelterwood units.

3.13.6.3 Cumulative Effects

Timber harvest, wildfire and post-fire projects, private land management, and insect and disease are activities considered in the cumulative effects analysis for projects in the past, present, and foreseeable future that overlap the analysis area in time and space. The logging actions that

occurred 50 or more years ago have still left areas with few large snags or down logs. There are still abundant small and large snags in the mature forests within the White River watershed and adjacent Wilderness as well as within the 2020 White River Fire area which burned nearly 18,000 acres with a mixed burn severity. Post-fire projects including the 250-acre project would not affect snag and down wood levels at the watershed scale. There is also some private land within the cumulative effects area and are included in the DecAID analyses. These private lands are not typically managed for snags or down logs and the area likely has very low levels of dead wood. The cumulative mortality from insect and disease regularly creates new snags and down wood. The Grasshopper project activities are therefore likely to have little cumulative effect on snag and down wood for the watershed as a result of this project is that snags and down wood would be retained and would bring the watershed closer to the range of historic variability and would result in a situation where the needs of snag dependent species are being met across the landscape now and into the future.

3.13.6.4 Management Direction

Proposed activities are consistent with Forest Plan Standards and Guidelines.

3.13.7 Migratory Birds

3.13.7.1 Existing Conditions

Close to 30 species of migratory birds occur on the Barlow and Hood River Districts, some of which are present within the project area during the breeding season. Habitat preferences vary and include the with late successional or early successional characteristics and open ponderosa pine habitat.

3.13.7.2 Direct and Indirect Effects

Under the no action alternative there would be no habitat alteration In the long term, stand densities and canopy cover could increase favoring certain species. For both action alternatives, the effects of thinning in mid-successional stands would have a combination of positive, neutral, and negative impacts on migratory bird use within the stands depending on which species are present. Treatments in the eastern portion of the planning area would improve pine/oak habitat for white-headed woodpecker, pygmy nuthatch, chipping sparrow, and Lewis' woodpecker. Other species that may benefit from thinning in the analysis area include the olive-sided flycatcher and Williamson's sapsucker. The species that may be negatively impacted include the brown creeper, Swainson's thrush, and hermit warbler.

Effects of Alternative 2 are the same as those described in Alternative 1 except for the shelterwood treatment areas. In these units, canopy cover reduction would increase the time in which late successional characteristics would be attained on these acres by as much as 75 to 100 years compared to Alternative 1. Shelterwood treatments would benefit olive-sided flycatcher and chipping sparrow and would reduce habitat for brown creeper, Swainson's thrush, and hermit warbler.

3.13.7.3 Cumulative Effects

The cumulative effects analysis considered past, present, and foreseeable future activities overlapping in time and space including past timber harvest on federal lands, road decommissioning and road closures, pre-commercial thinning, and recreational use. Cumulative effects would have a combination of positive, neutral, and negative impacts on migratory birds.

3.13.7.4 Management Direction

The proposed action is consistent with Executive Order 13186 (66 Fed. Reg. 3853, January 17, 2001) "Responsibilities of Federal Agencies to Protect Migratory Birds."

3.13.8 Forest Plan Consistency and Other Management Direction

The analysis is consistent with Forest Plan Standards and Guidelines. The analysis completed all requirements for Federally Threatened, Endangered or Proposed Species, Region 6 Sensitive Species, Management Indicator Species, and other required analysis (snags and down wood and migratory birds). Each section (3.13.1 - 3.13.7) contains details about consistency with management direction pertaining to each species and/or associated habitat.

3.14 Other Resource Information and Disclosures

3.14.1 Climate Change

This section summarizes the Climate Change Report which is incorporated by reference and qualitatively addresses aspects of the project that may affect carbon emission or sequestration and how the project may help or hinder the Forest's ability to deal with climate change.

With no action, the project area would continue to sequester carbon on site. Treatments proposed by both action alternatives would result in some carbon emissions and some carbon sequestration. The benefits to Forest health and resiliency with the action alternatives would allow stands to adapt to the future climate. The Forest Plan, as amended, does not contain direction related to climate change. The contribution to cumulative effects on global greenhouse gasses and climate change would be negligible. In the event of a future area wildfire, risks to resources and surrounding communities including the Pine Hollow Wildland Urban Interface may be reduced.

3.14.2 Conflicts with Plans, Policies or Other Jurisdictions

NEPA at 40 CRF 1502.25(a) directs "to the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with . . . other environmental review lands and executive orders."

The actions would not conflict with the plans or policies of other jurisdictions, including the Tribes. It would not conflict with any other policies and regulations or laws, including the Clean Water Act, Clean Air Act, Endangered Species Act, Magnuson-Stevens Fishery Conservation and Management Act, or National Historic Preservation Act.

3.14.3 Consumers, Civil Rights, Minority Groups, Women, and Environmental Justice

Executive Order 12898 directs agencies to identify and address disproportionately high and adverse human health or environmental effects of projects on certain populations and including subsistence uses. The Civil Rights Act of 1964 prohibits discrimination in program delivery and employment. There are nearby communities with minorities and low-income populations that may be affected by the project including but not limited to Wamic, Tygh Valley, Sportsman's Park, Pine Hollow, Pine Grove, Maupin and Dufur. Further away are the larger communities of the Dalles and Hood River. The community of Warm Springs is less than 40 miles from the project area.

There are no known areas of religious significance in the area. There are no known special places for minority or low-income communities in the area. Individuals may work, recreate, gather forest products or have other interests in the area. Neither the impacts nor benefits of this project would fall disproportionately on minorities or low-income populations.

No disproportionate impacts to consumers, civil rights, minority groups, and women are expected from this project. Vegetation management and other work would be implemented by contracts with private businesses. Contracting for the project's activities would use approved management direction to protect the rights of these private companies. No adverse civil rights impacts were identified. There would be no meaningful or measurable direct, indirect or cumulative effects to environmental justice or civil rights.

3.14.4 Floodplains and Wetlands

The Clean Water Act of 1977 (CWA) and subsequent amendments established the basic structure of regulating discharges of pollutants into waters of the United States. The Environmental Protection Agency (EPA) has the authority to implement pollution control programs and to set water quality standards for all contaminants in surface waters. The EPA delegated implementation of the CWA to the states; the State of Oregon recognizes the Forest Service as the Designated Management Agency for meeting CWA requirements on National Forest System lands. The proposed action is in compliance with the Clean Water Act as described in the Hydrology Report and section 3.6. Requirements associated with the Federal Clean Water Act (CWA) and Oregon Department of Environmental Quality water quality regulations will be met through implementation and monitoring of PDC and BMPs, following guidance in USDA National Best Management Practices for Water Quality Management on National Forest System Lands (USDA 2012).

3.14.5 Inventoried Roadless Areas

Inventoried Roadless Areas (IRA) are included in the project area. A total of approximately 272 of these acres within IRA are proposed for treatment by both action alternatives described in this project. Both action alternatives propose to treat the same 272 acres of IRA (See section 2.0).

Treatments in Inventoried Roadless Areas (IRA) require approval for an exception to the Roadless Area Conservation Rule (RACR). Following the Chief's October 2018 direction, the Regional Forester has been delegated the authority to approve exceptions. In Region 6 this task is delegated to the Deputy Regional Forester. The Forest submitted a request to the Deputy Regional Forester on September 10, 2019 which was approved on September 18, 2019. The Roadless Area Conservation Rule (RACR) exception that applies is: §294.13(b)1(ii): "To maintain or restore the characteristics of ecosystem composition and structure, such as to reduce the risk of uncharacteristic wildfire effects, within the range of variability that would be expected to occur under natural disturbance regimes of the current climatic period."

This approved submission which includes a map of IRAs is incorporated by reference and included on the project website. Specialist reports disclose effects specific to Inventoried Roadless Areas. Specific project design criteria pertaining to IRA are included in Appendix A. Section 2.3 provides more information about proposed activities in IRA.

3.14.6 Irreversible and Irretrievable Commitments of Resources

Irreversible commitments of resources are those that are forever lost and cannot be reversed. Irretrievable commitments of resources are considered those that are lost for a period of time and, in time, can be replaced. The use of rock for road surfacing is an irreversible resource commitment; however, rock quarries have sufficient capacity to provide for the long-term needs for road surfacing rock.

3.14.7 National Recreation Areas

The Mt. Hood National Recreation Area (NRA) is included in the project area. Both action alternatives propose to treat the same acres of NRA (See section 2.0).

The Omnibus Public Land Management Act of 2009 designated the Mount Hood National Recreation Area "to provide for the protection, preservation, and enhancement of recreational, ecological, scenic, cultural, watershed, and fish and wildlife values" (Public Law 111.11 Sec. 1204).

The Act permits the "cutting, sale or removal of timber" for specific purposes. Section 2.3 of this EA includes more information about the Mt. Hood NRA. Specialist reports disclose effects specific to the NRA when appropriate to the resource.

3.14.8 National Forest Management Act

The National Forest Management Act (NFMA) of 1976 requires that the Agency develop land management plans. It also requires the Forest to determine the suitability of a specific land area for timber management and contains other requirements that are built into Forest Plan standards and guidelines. The actions proposed were developed to be in full compliance with NFMA via compliance with the Forest Plan, as amended. This document contains numerous references as to how this project complies with the Forest Plan, as amended.

3.14.9 Potential or Unusual Expenditures of Energy

There are no proposals that would result in any unusual expenditure of fuel.

3.14.10 Prime Farmlands, Rangelands, and Forestlands

None of the alternatives would have an adverse impact to the productivity of farmland, rangeland, or forestland. No reductions in long-term productivity are expected. See section 3.11 (soils). See Appendix A (project design criteria) for details about protecting rangelands and associated resources.

3.14.11 Treaty Resources and Reserved Indian Rights

The planning area is located on usual and accustomed land for the Confederated Tribes of the Warm Springs Reservation of Oregon (as is all of the Forest). No impacts on American Indian social, economic, or subsistence rights are anticipated. No impacts are anticipated related to the American Indian Religious Freedom Act. The Confederated Tribes of the Warm Springs Reservation of Oregon were consulted in reference to this Proposed Action.

3.14.12 Wild and Scenic Rivers, Wilderness, and Potential Wilderness Areas

There are no Wild and Scenic Rivers, Wildernesses, or Potential Wilderness Areas in the project area. Some project activities would take place in areas adjacent to the Badger Creek Wilderness. Therefore, resource specialists considered this in their analyses, when appropriate for the resource.

4.0 Consultation and Coordination

The Forest Service consulted the following federal, state, and local agencies and Tribes during the development of this assessment:

4.1 Federal, State, and Local Agencies

U.S. Fish and Wildlife Service Oregon Historic Preservation Office (SHPO) Oregon Department of Fish and Wildlife Oregon Department of Forestry Wasco County, Oregon City of The Dalles, Oregon

4.2 Tribes

Confederated Tribes of the Warm Springs Reservation of Oregon

5.0 References

References below pertain to in-text citations included in sections 1.0 and 2.0 of this EA. Each resource report summarized in section 3.0 is incorporated by reference. See each report for a complete list of references which support each analysis.

USDA Forest Service. 1990a. Final Environmental Impact Statement for the Mt. Hood National Forest Land and Resource Management Plan and Record of Decision.

USDA Forest Service. 1990b. Mt. Hood National Forest Land and Resource Management Plan. (Forest Plan).

USDA Forest Service and USDI Bureau of Land Management. 1994a. Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and OldGrowth Forest Related Species Within the Range of the Northern Spotted Owl (Northwest Forest Plan). Portland, Oregon.

USDA Forest Service and USDI Bureau of Land Management. 1994b. Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl; Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest related Species within the Range of the Northern Spotted Owl (Northwest Forest Plan). Portland, Oregon.

USDA Forest Service. 1995. Regional Ecosystem Office Memorandum: Criteria to Exempt Specific Silvicultural Activities in LSRs and MLSAs from REO Review.

USDA Forest Service. 1996. White River Late-Successional Reserve Assessment.

USFWS. 2011. Revised Recovery Plan for the Northern Spotted Owl (Strix occidentalis caurina). Portland, Oregon.

USDA Forest Service. 2015. Mt Hood National Forest Travel Analysis Report, Sandy, OR.