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Amendment to the Fire and Fuels Report

Westside Fire Recovery Project

Happy Camp Oak Knoll and Salmon/Scott River Ranger Districts,
Klamath National Forest
Siskiyou County, California

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Table of Contents

I.	Summary of Modifications between Draft and Final EIS.....	1
	Changes in Fuels Treatment Acres between DEIS and FEIS	1
	Changes and Clarification to the DEIS Fire and Fuels Report	2
	Addition to Analysis on Large Woody Debris	3
II.	Environmental Consequences of Modified Alternatives	8
	Modified Alternative 2 and Modified Alternative 3	8
	Methods.....	8
	Environmental Consequences	8
	Project Area A: Beaver Fire.....	9
	Project Area B: Happy Camp Complex.....	10
	Project Area C: Whites Fire.....	11
	Project Area A: Beaver Fire.....	12
	Project Area B: Happy Camp Complex.....	13
	Project Area C: Whites Fire.....	14
III.	Modification of Environmental Consequences by Fire Area since the Draft EIS	15
	Alternative 1.....	15
	Project Area A: Beaver Fire.....	15
	Project Area B: Happy Camp Complex.....	15
	Project Area B: Whites Fire.....	15
	Cumulative Effects.....	15
	Project Area A: Beaver Fire.....	15
	Project Area B: Happy Camp Complex.....	16
	Project Area B: Whites Fire.....	16
	Alternative 2.....	16
	Project Area A: Beaver Fire.....	16
	Project Area B: Happy Camp Complex.....	17
	Project Area B: Whites Fire.....	17
	Cumulative Effects.....	17
	Project Area A: Beaver Fire.....	17
	Project Area B: Happy Camp Complex.....	18
	Project Area B: Whites Fire.....	18
	Alternative 3.....	18

Direct Effects and Indirect Effects.....	18
Project Area A: Beaver Fire.....	18
Project Area B: Happy Camp Complex.....	18
Project Area B: Whites Fire.....	18
Cumulative Effects.....	18
Project Area A: Beaver Fire.....	18
Project Area B: Happy Camp Complex.....	19
Project Area B: Whites Fire.....	19
Alternative 4.....	19
Direct Effects and Indirect Effects.....	19
Project Area A: Beaver Fire.....	19
Project Area B: Happy Camp Complex.....	19
Project Area B: Whites Fire.....	20
Cumulative Effects.....	20
Project Area A: Beaver Fire.....	20
Project Area B: Happy Camp Complex.....	20
Project Area B: Whites Fire.....	20
Alternative 5.....	21
Project Area A: Beaver Fire.....	21
Project Area B: Happy Camp Complex.....	21
Project Area B: Whites Fire.....	21
Cumulative Effects.....	21
Project Area A: Beaver Fire.....	21
Project Area B: Happy Camp Complex.....	21
Project Area B: Whites Fire.....	22
Alternative 2 as Modified	22
Project Area A: Beaver Fire.....	22
Project Area B: Happy Camp Complex.....	22
Project Area B: Whites Fire.....	22
Cumulative Effects.....	22
Project Area A: Beaver Fire.....	22
Project Area B: Happy Camp Complex.....	23

Project Area B: Whites Fire	23
Alternative 3 as Modified	23
Project Area A: Beaver Fire.....	23
Project Area B: Happy Camp Complex.....	23
Project Area B: Whites Fire.....	23
Cumulative Effects.....	23
Project Area A: Beaver Fire.....	23
Project Area B: Happy Camp Complex.....	24
Project Area B: Whites Fire.....	24
Differences Between Alternatives	24
Project Area A: Beaver Fire.....	24
Project Area B: Happy Camp Complex.....	25
Project Area C: Whites Fire.....	26
Comparison of Alternatives	27
Compliance with law, regulation, policy, and the Forest Plan	28

List of Tables

Table 1: Changes in acreage treated between draft and final for each alternative..... 1

Table 2: Comparison of post-fire effects of alternatives on fire and fuels after 10 years 2

Table 3: Table 1-1 of the LSR Assessment shows the number of downed logs by series (vegetation) type.
..... 4

Table 4: Representative stand for the Beaver Fire area with and without salvage harvest and follow-up
fuels treatment. The table on the left represents the fire area with no salvage over time and the right
table represents the area should salvage occur..... 5

Table 5: Representative stand for the Happy Camp Fire area with and without salvage harvest and follow-
up fuels treatment. The table on the left represents the fire area with no salvage over time and the
right table represents the area should salvage occur. 6

Table 6: Representative stand for the Happy Camp Complex area with and without salvage harvest and
follow-up fuels treatment. The table on the left represents the fire area with no salvage over time and
the right table represents the area should salvage occur. 7

Table 7: Projected flame lengths of treated acres under Modified Alternative 2, 10 years post-treatment .. 9

Table 8: Projected fireline intensities of treated acres under Modified Alternative 2, 10 years post-
treatment 9

Table 9: Beaver Fire; modified alternatives projected flame lengths 10 years post treatment. 9

Table 10: Beaver Fire; modified alternatives projected fireline intensity 10 years post treatment..... 10

Table 11: Happy Camp Complex; modified alternatives projected flame lengths 10 years post treatment.
..... 10

Table 12: Happy Camp Complex; modified alternatives projected fireline intensity 10 years post
treatment. 10

Table 13 : Whites Complex; modified alternatives projected flame lengths 10 years post treatment. 11

Table 14 : Whites Complex; comparison between alternatives of projected fireline intensity 10 years post
treatment. 11

Table 15: Projected flame lengths of treated acres under Modified Alternative 3, 10 years post-treatment
..... 12

Table 16: Projected fireline intensities of treated acres under Modified Alternative 3, 10 years post-
treatment 12

Table 17: Beaver Fire; modified alternatives projected flame lengths 10 years post treatment. 13

Table 18: Beaver Fire; modified alternatives projected fireline intensity 10 years post treatment..... 13

Table 19: Happy Camp Complex; modified alternatives projected flame lengths 10 years post treatment.
..... 13

Table 20: Happy Camp Complex; modified alternatives projected fireline intensity 10 years post
treatment. 14

Table 21 : Whites Complex; modified alternatives projected flame lengths 10 years post treatment. 14

Table 22 : Whites Complex; comparison between alternatives of projected fireline intensity 10 years post
treatment. 14

Table 23 : Beaver Fire Retention Areas in Acreage and Percent of Treatment Area 25

Table 24 : Happy Camp Fire Retention Areas in Acreage and Percent of Treatment Area 26

Table 25 : Whites Fire Retention Areas in Acreage and Percent of Treatment Area 27

Table 26: Comparison of effects by alternative for Fire and Fuels Resource..... 27

I. Summary of Modifications between Draft and Final EIS

Changes in Fuels Treatment Acres between DEIS and FEIS

Methodology

There were no changes in methodology for the fire and fuels analysis between the DEIS and the FEIS.

Environmental Consequences

As a result of field verification and layout changes, the FEIS reduces the overall acreage of fuels treatments for all action alternatives (Alternatives 2 through 5). Table 1 below shows the changes in fuels treatment acres between draft and final. Fuel treatments remain as described in the DEIS, and consist of salvage harvest, site preparation, roadside fuels treatments, and hazardous fuels treatments (e.g. wildland urban interface, strategic ridgelines and/or prescribed burning). Where fuels treatments overlap, acres are counted twice. For example, a prescribed burn unit may overlap a ridgetop treatment. Since these treatments would likely occur during different timeframes, the acres are counted twice. For all action alternatives, including modified Alternative 2 and Modified Alternative 3, there will be no salvage harvest in aquatic Riparian Reserves or inner gorges. There is hand treatment in portions of Riparian Reserves in alternative 2, 4, 2 as modified and 3 as modified. Fuels treatments reflected in this report will be an over-estimate because of overlapping treatments and portions of units not being treated for snag retention and areas in the Riparian Reserves. See Chapter 2 of the FEIS for details on the treatments and differences between alternatives.

Table 1: Changes in acreage treated between draft and final for each alternative.

	ALT 2	ALT 3	ALT 4	ALT 5
DEIS Fuels Treatment acres	44,800	40,800	41,100	35,200
FEIS Fuels Treatment acres	41,170	39,115	39,775	30,625

Table 2 below is an updated version of Table S-2 (Fire and Fuels Report pg. 13) from the DEIS Fire and Fuels Resource Report. It shows the updated acreage for post-fire effects of alternatives 1 through 5 on potential fire behavior and fuels conditions, 10 years after treatment implementation. The table represents the amount of area meeting desired fuels conditions. The alterations from Table S-2 in the draft document were necessitated by the changes in fuel treatment acres for each alternative illustrated in Table 1 above. The data and acreage analyzed in the DEIS will have similar effects on fire and fuels resources in the FEIS because they were only minor changes in overall treatment area within a large landscape. A small reduction in overall fuels treatment occurred due to the changes between the DEIS and FEIS.

Table 2: Comparison of post-fire effects of alternatives on fire and fuels after 10 years

Analysis Indicator	Measurement Indicator	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Fuel loading of small material (<3")	Acres with <10 tons per acre	14,000	41,170	39,115	39,775	30,625
Flame Lengths	Acres with flame lengths <4'	14,000	41,170	39,115	39,775	30,625
Fireline Intensity	Acres with <100 BTU**/foot/sec	14,000	41,170	39,115	39,775	30,625
Rate of Spread	Acres <20chains/hour	14,000	41,170	39,115	39,775	30,625

**BTU=British Thermal Unit which is a measure of energy which represents heat for fireline intensity.

Changes and Clarification to the DEIS Fire and Fuels Report

Fire hazard is defined and described under the “Analysis Indicator” section (pg. 118 of the DEIS and pg. 21 of the Fire and Fuels Report). Fire severity and fire behavior are often terms used to describe how a fire may burn depending on the fuels conditions (i.e. fire hazard). Since the terms fire severity and fire behavior are used throughout the Fire and Fuels Report to describe affects to the measurement indicator fire hazard, there is a need to further define.

Although the term fire behavior commonly refers to the variable characteristics of an active flaming front, in some instances, the term fire behavior is used interchangeably with fire severity. The term fire severity relates specifically to the level of effects of fire on the post burn landscape. In most cases when the term fire behavior is used to indicate fire severity, it adds the qualifier “problem fire behavior”. According to the Fire Effects Information System website “Fire severity generally indicates the degree of environmental change caused by fire. Scott and Reinhardt (2007) provide a slightly more detailed definition: “[fire severity is] the effect of a fire on ecosystem properties, usually described by the degree of soil heating or mortality of vegetation. Fireline intensity is the rate of heat release per unit time per unit length of fire front. Not synonymous with fire severity, which refers to the degree of environmental change caused by fire.” (FEIS Glossary).

On page 124 of the DEIS, it states that “Forested areas are anticipated to re-establish into a non-forested vegetation composition of shrubs and forbs (see Vegetation section) and in turn contribute to fire ignition and spread potential.” To better clarify this sentence, it should state that “Areas that were once forested and experienced high fire severity will re-establish into a non-forested vegetation composition of shrubs and forbs (see Vegetation section) and in turn contribute to fire ignition and spread potential.

On page 125 of the DEIS, the Alternative 1 Cumulative Effects section should be as follows:

“Ongoing and foreseeable future actions in the project area are listed in appendix c. Alternative 1 will not supplement other present and/or reasonable foreseeable future projects that are planned to improve forest health, old growth desired conditions, fire resilience, and suppression effectiveness across the landscape.

“Alternative 1 is not an action alternative and does not propose treating fuels adjacent to any private lands. Fuel reduction activities planned by fire safe councils and other community organizations will occur. While opportunities to develop fuel breaks on the Forest to connect with those proposed by adjacent land owners still exist, this project would not provide the opportunity.

In the Happy Camp and Whites fire areas there will be approximately 29,215 acres of timber and/or fuels management that have a high likelihood of meeting desired conditions for fire hazard and resistance to control for areas being treated at the site scale. These effects will have some impact on the landscape scale over the next 20 years because of the moderate spatial scale of these projects relative to the project area. There will be a decrease in fire severity and resistance to control over time in the Happy Camp and Whites fire area.

Approximately 20,000 acres of the Beaver fire area is owned by Fruit Growers Supply Company or Michigan California Timber Company, and is located within the Beaver Fire area. Both of these companies are either currently treating or planning to treat their land by conducting salvage operations on their respective properties. It is understood that Fruit Growers Supply Company is planning a series of fuel breaks within the ridge and road systems of the Beaver Fire area; their lands are intermixed with National Forest System land. Salvage operation of all trees is generally occurring on slopes less than 45 percent and commercial trees are being removed on slopes greater than 45 percent. After salvage operations are completed replanting is expected. It is also expected that herbicide treatments will be applied to the planted areas to reduce shrub growth. As a result of the operations expected on privately owned lands, these lands are expected to be relatively fire safe. This is primarily due to the removal or reduction of most of the dead and dying trees on these lands. This alternative will not reduce fire severity or resistance to control on Forest Service Lands and won't contribute to the fuels reduction on the private lands in the Beaver fire area.

Addition to Analysis on Large Woody Debris

Within Late Successional Reserves, it is necessary to retain snags and large woody logs that are likely to persist until late successional conditions develop. However, retaining snags and large woody debris is not desirable where they would be in excess of fuel reduction requirements, as excessive large woody debris loads are not characteristic of a fire resilient ecosystem that allows old growth characteristics to re-occur on the landscape. The concept of retaining an adequate number of large logs is explained in Beardsley and Warbington 1996, whose findings and data are used as a guide within the Klamath National Forest Forest-Wide Late Successional Reserve Assessment (LSR Assessment, 1999). It is important to note that this data reflects 60 to 80 years of fire suppression, in which values may be inflated over historical conditions (LSR Assessment page 1-4). Table 1-1 of the LSR Assessment, and table 2 of Beardsley and Warbington, show that downed dead trees (logs) at least 20 inches in diameter ranged from an average of 5 to 10 trees per acre for vegetation types most impacted within the Westside Fire Recovery Project.

Table 3 summarizes the number of downed logs by vegetation type in Late Successional Reserves.

Table 3: Table 1-1 of the LSR Assessment shows the number of downed logs by series (vegetation) type.

Vegetation Series Type	Number of Downed Logs > 20" DBH
Mixed Conifer	7
White fir	10
Red fir	9
Douglas-fir - Tanoak	9

Pages 3-4 and 3-5 of the LSR Assessment also show that the number of large downed logs per acre would be expected to be higher on north and east facing aspects compared to south and west facing aspects. Snags and large downed wood would also be occurring in scattered clumps. This pattern is consistent with conclusions found in Skinner 2002 (PSW-GTR-181).

Skinner 2002 describes the influence of fire on the dynamics of dead woody material. Skinner concluded that fire history resulted in a “landscape with many of the snags and logs clustered in both time and space, and very sparsely distributed in the intervening time and space.” Skinner also concluded that “it is unlikely that much large woody material survived long enough to decompose fully in fire regimes that preceded the fire-suppression era.” This research suggests that the amount of dead wood would have been much less under the historical fire regime than exists today and is consistent with other research with similar fire regimes (Knapp 2015 and Stephens 2004).

The Purpose and Need for the Westside Fire Recovery Project shows a need for a restored and fire-resilient ecosystem and a reduction in fuels. This purpose and need is supported by the desired condition in the LSR Assessment (page 3-4) which states that, generally, fuels conditions will be such that flame lengths would be less than 4 feet. The analysis within the Fire and Fuels Report further describes the need for action and is primarily related to the need to reduce snag densities and fuel loading (see Fire and Fuels Report). The following tables (Tables 4 through 6) compare Alternative 1 (no action) and Alternative 2 at representative sites proposed for treatment under Alternative 2.

Table 4: Representative stand for the Beaver Fire area with and without salvage harvest and follow-up fuels treatment. The table on the left represents the fire area with no salvage over time and the right table represents the area should salvage occur.

Plot 3 100% Mortality						Plot 3 100% Mortality					
Year	Surface Fuel < 3" dbh (tons/acre)	Surface Fuels > 3" dbh (tons/acre)	Intensity (btu/ft/sec) 26 ch/hr	Intensity (btu/ft/sec) 40 ch/hr	Resistance to Control	Year	Surface Fuel < 3" dbh (tons/acre)	Surface Fuels > 3" dbh (tons/acre)	Intensity (btu/ft/sec) 26 ch/hr	Intensity (btu/ft/sec) 40 ch/hr	Resistance to Control
1	1.35	9.58	40	40	Low	1	0.27	1.92	8	8	Low
10	8.91	67.26	5155	7870	Extreme	10	1.78	13.45	1030	1572	Low
20	11.38	93.04	6963	10630	Extreme	20	2.27	18.61	1391	2124	Low
30	11.08	98.96	7224	11030	Extreme	30	2.21	19.79	1443	2204	Low
40	9.72	95.75	6813	10401	Extreme	40	1.94	19.15	1361	2079	Low
50	8.11	88.69	6152	9393	Extreme	50	1.62	17.74	1230	1877	Low

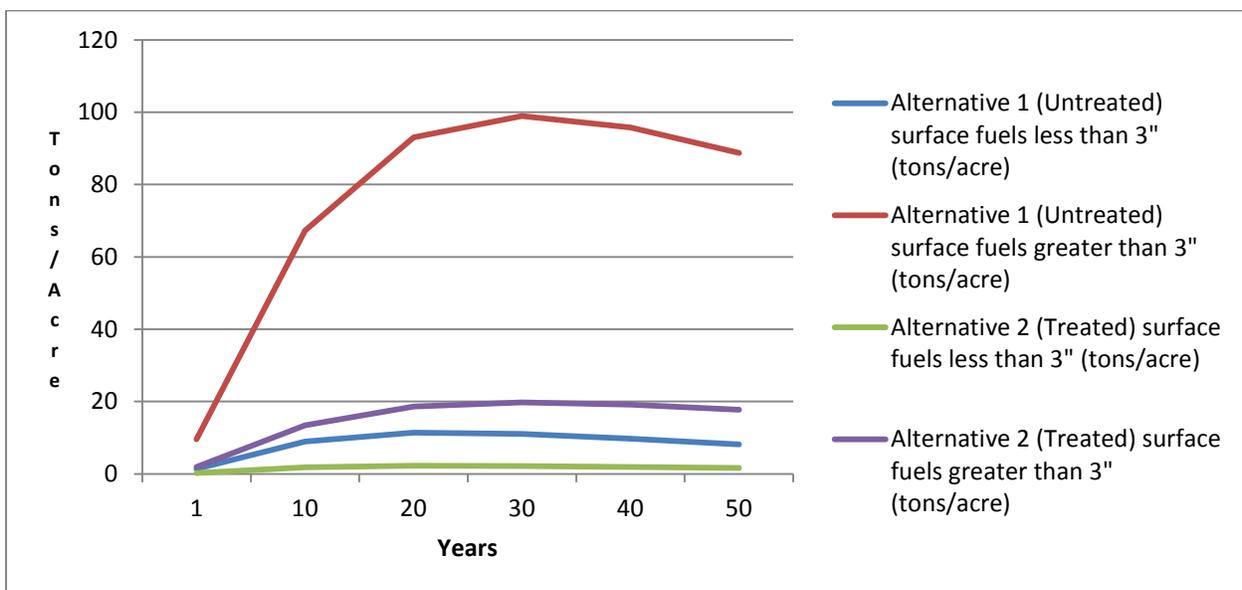


Table 5: Representative stand for the Happy Camp Fire area with and without salvage harvest and follow-up fuels treatment. The table on the left represents the fire area with no salvage over time and the right table represents the area should salvage occur.

Walker/Grider Creek Stand ID 050552ABCD001116414144205					
Year	Surface Fuel < 3" dbh (tons/acre)	Surface Fuels > 3" dbh (tons/acre)	Intensity (btu/ft/sec) 26 ch/hr	Intensity (btu/ft/sec) 40 ch/hr	Resistance to Control
1	1.49	14.40	55	55	Low
10	14.34	51.11	5259	8029	Extreme
20	16.82	73.97	6912	10553	Extreme
30	12.89	80.54	6567	10025	Extreme
40	10.83	76.98	6013	9179	Extreme
50	10.00	70.61	5526	8437	Extreme

Walker/Grider Creek Stand ID 050552ABCD001116414144205					
Year	Surface Fuel < 3" dbh (tons/acre)	Surface Fuels > 3" dbh (tons/acre)	Intensity (btu/ft/sec) 26 ch/hr	Intensity (btu/ft/sec) 40 ch/hr	Resistance to Control
1	3.48	12.90	70	70	Low
10	4.59	17.12	1724	2632	Low
20	5.01	18.89	1892	2889	Moderate
30	4.95	18.14	1841	2811	Low
40	5.80	15.60	1857	2835	Low
50	8.08	14.53	2204	3365	Low

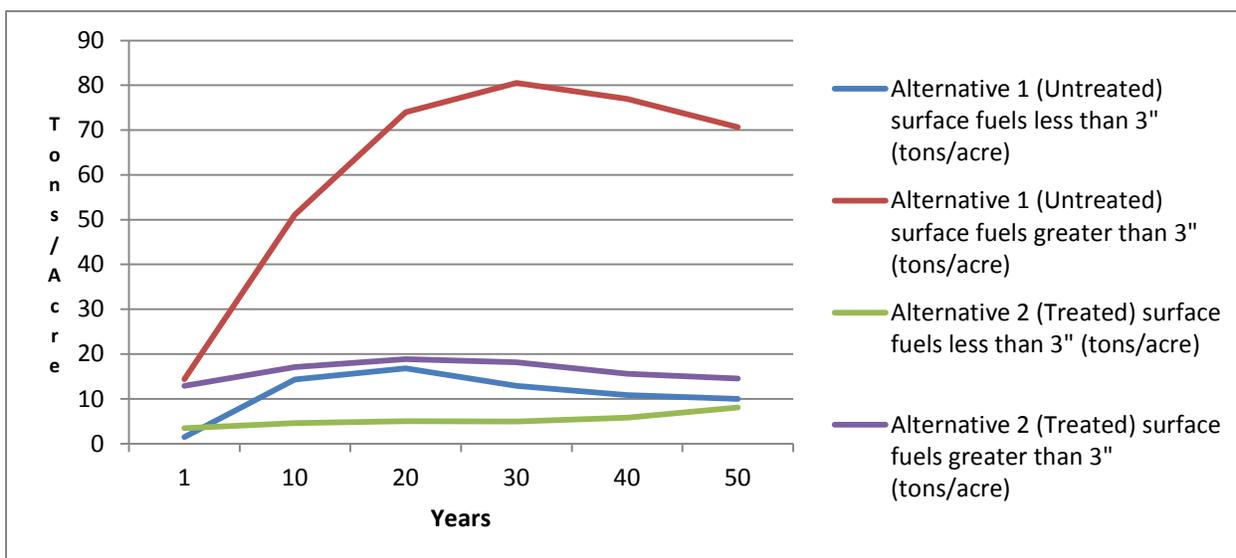
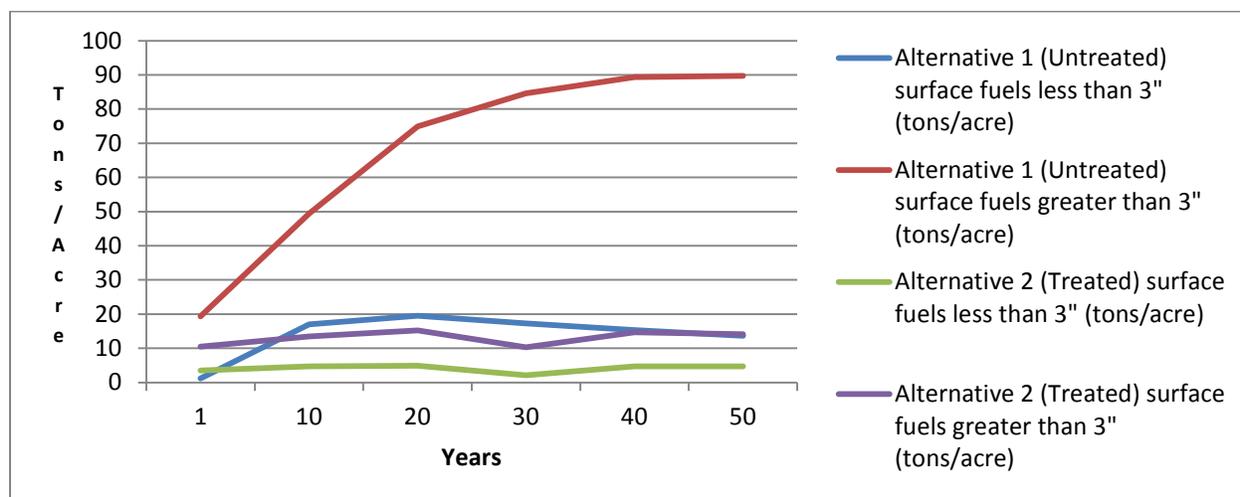


Table 6: Representative stand for the Happy Camp Complex area with and without salvage harvest and follow-up fuels treatment. The table on the left represents the fire area with no salvage over time and the right table represents the area should salvage occur.

Scott River Stand ID 05055518010208060009						Scott River Stand ID 05055518010208060009					
Year	Surface Fuel < 3" dbh (tons/acre)	Surface Fuels > 3" dbh (tons/acre)	Intensity (btu/ft/sec) 26 ch/hr	Intensity (btu/ft/sec) 40 ch/hr	Resistance to Control	Year	Surface Fuel < 3" dbh (tons/acre)	Surface Fuels > 3" dbh (tons/acre)	Intensity (btu/ft/sec) 26 ch/hr	Intensity (btu/ft/sec) 40 ch/hr	Resistance to Control
1	1.15	19.32	66	66	Low	1	3.49	10.46	63	63	Low
10	17.04	49.41	5647	8622	Extreme	10	4.71	13.44	1549	2364	Low
20	19.48	74.90	7434	11349	Extreme	20	4.86	15.21	1669	2548	Low
30	17.28	84.58	7559	11540	Extreme	30	2.12	10.27	922	1408	Low
40	15.33	89.31	7464	11395	Extreme	40	4.71	14.64	1613	2463	Low
50	13.65	89.70	7187	10973	Extreme	50	4.69	14.12	1582	2416	Low



Tables 4 through 6 displays that fuel loading under alternative 1 does not meet desired conditions for the Westside Fire Recovery project for measures of fire hazard and resistance to control. The number of snags left on the landscape under alternative 1 would create conditions in the future for an increased probability of high severity and stand-replacing fire.

Project mitigations are aimed at balancing the number of snags needed for wildlife and watershed concerns while still meeting fire and fuels resource objectives. For example, snags are being retained in aquatic Riparian Reserves and inner gorges. In addition, snags are being retained in areas related to critical habitat elements; and include legacy trees across the landscape plus areas that will aid in maintaining wildlife connectivity. Alternatives for the Westside Fire Recovery Project have different levels of retention areas, where no treatment is to occur, to help describe the effects to resources.

Between Draft and Final, plots were taken within snag retention areas. This data further supports tables 4 through 6. The data shows that on average (over a 100 acre area); there are over 20 trees per acre larger than 20 inches D.B.H. within retention areas. These snags will aid in meeting the objectives of the LSR and Land Management Plan as standing dead trees and as coarse woody debris. The LSR Assessment standards from table 3 are expected to be exceeded. In addition, the plots did not account for coarse woody debris already on the ground.

This data was used to help describe if desired conditions were met for the project area. See individual resource reports for further analysis and the “Responsible Opposing Points of View” section in Chapter 3, EIS.

II. Environmental Consequences of Modified Alternatives

Modified Alternative 2 and Modified Alternative 3

This is an analysis of the modified alternatives by fire-identified project areas (A: Beaver Fire, B: Happy Camp Complex, and C: Whites Fire).

Methods

The methods used for this analysis can be found in detail in the Fire and Fuels Resource Report. Fuels treatment analysis reflects changes in acreage between draft and final. Fuels prescription changes were made for the modified alternatives for roadside fuels treatments and are described below. Fuels treatments and prescriptions will otherwise be the same as described in the DEIS.

Modified Alternative 2 and Modified Alternative 3 fuels prescriptions were developed to mitigate concerns related to important wildlife habitat elements. There are two different prescriptions depending where they occur on the landscape; the complete understory treatments and modified understory treatments. These are described in Chapter 2 of the FEIS.

Treatment area was used to compare alternatives in the Direct and Indirect Effects in section III below. The analysis area for alternative 1, the Happy Camp and White fire area for alternative 2 treatment area, and alternative 5 for the Beaver fire area are used because these alternatives had the most proposed fuels treatments relative to the other alternatives. Flame lengths and fireline intensity are the only indicators displayed in the tables. Previous modeling showed a direct correlation between a reduction in fuel loading on flame lengths, fireline intensity and rates of spread. It is therefore assumed that acres treated to reduce flame lengths below 4’ flame lengths, as shown in the tables below, would also meet desired conditions of a reduction in fuel loading (<10 tons per acre) and rates of spread (<20 chains per hour). The analysis that compares alternatives can be seen in section III of this amendment document. Further analysis was already provided in the Fire and Fuels Report.

Environmental Consequences

Direct Effects and Indirect Effects

Modified Alternative 2

The direct and indirect effects of Modified Alternative 2 are anticipated to be similar to those described in Alternative 2. Additional fuels treatments proposed in Alternative 5 for the Beaver Fire are also proposed under this alternative. Proposed fuels treatment activities are anticipated to reduce fire hazard and resistance to control for all fire areas.

Table 7: Projected flame lengths of treated acres under Modified Alternative 2, 10 years post-treatment

Flame Length	Project Area A: Beaver Fire	Project Area B: Happy Camp Complex	Project Area C: Whites Fire	Project Total
< 4 feet	4,300	22,870	12,720	39,890
4 to 8 feet	0	0	0	0
8 to 11 feet	0	0	0	0
> 11 feet	0	0	0	0

Table 8: Projected fireline intensities of treated acres under Modified Alternative 2, 10 years post-treatment

Fireline Intensity	Project Area A: Beaver Fire	Project Area B: Happy camp Complex	Project Area C: Whites Fire	Project Total
< 100 btu/ft/sec	4,300	22,870	12,720	39,890
100 to 500 btu/ft/sec	0	0	0	0
500 to 1000 btu/ft/sec	0	0	0	0
> 1000 btu/ft/sec	0	0	0	0

Project Area A: Beaver Fire

Direct Effects and Indirect Effects

The direct and indirect effects of Modified Alternative 2 are anticipated to be similar to those described in Alternative 2 of the DEIS. The Fire Behavior Synopsis in the Fire and Fuels Report for Alternative 2 would describe the expected effects for the Beaver Fire. Modified Alternative 2 would also add additional hazardous fuels treatments as proposed in Alternative 5. The purpose of these treatments would be to have additional ridgetop treatments, roadside fuels treatments, and prescribed fire to tie into activities occurring on private timberlands. The effects of these treatments are described under Alternative 5 of the Environmental Consequences section in the Fire and Fuels Report.

Table 9: Beaver Fire; modified alternatives projected flame lengths 10 years post treatment.

Flame Length	Modified Alt 2	Modified Alt 3
< 4 feet	4,300	4,695
4 to 8 feet	0	0
8 to 11 feet	0	0
> 11 feet	0	0

Table 10: Beaver Fire; modified alternatives projected fireline intensity 10 years post treatment.

Fireline Intensity	Modified Alt 2	Modified Alt 3
< 100 btu/ft/sec	4,300	4,695
100 to 500 btu/ft/sec	0	0
500 to 1000 btu/ft/sec	0	0
> 1000 btu/ft/sec	0	0

Cumulative Effects

Cumulative effects are the same as described in the Fire and Fuels Report.

Project Area B: Happy Camp Complex

Direct Effects and Indirect Effects

For Modified Alternative 2, the direct and indirect effects related to fuels treatments are similar in type and acreage to those described under Alternative 2 (pg. 122-128, DEIS). The removal of some salvage and site preparation units compared to Alternative 2 would not significantly reduce the effectiveness of fuels treatments within the Happy Camp Complex burned area, but would directly affect the treatment unit; in which, the treatment unit would likely no longer meet desired conditions for fire hazard and fire suppression capabilities.

Table 11: Happy Camp Complex; modified alternatives projected flame lengths 10 years post treatment.

Flame Length	Modified Alt 2	Modified Alt 3
< 4 feet	22,870	20,870
4 to 8 feet	0	0
8 to 11 feet	0	0
> 11 feet	0	0

Table 12: Happy Camp Complex; modified alternatives projected fireline intensity 10 years post treatment.

Fireline Intensity	Modified Alt 2	Modified Alt 3
< 100 btu/ft/sec	22,870	20,870
100 to 500 btu/ft/sec	0	0
500 to 1000 btu/ft/sec	0	0
> 1000 btu/ft/sec	0	0

Cumulative Effects

Cumulative effects are the same as described in the Fire and Fuels Report.

Project Area C: Whites Fire

Direct Effects and Indirect Effects

For Modified Alternative 2, the direct and indirect effects related to fuels treatments are similar in type and acreage to those described under Alternative 2 (pg. 122-128, DEIS). The removal of some salvage and site preparation units compared to Alternative 2 would not significantly reduce the effectiveness of fuels treatments within the Whites Fire burned area, but would directly affect the treatment unit; in which, the treatment unit would likely no longer meet desired conditions for fire hazard and fire suppression capabilities.

Table 13 : Whites Complex; modified alternatives projected flame lengths 10 years post treatment.

Flame Length	Modified Alt 2	Modified Alt 3
< 4 feet	12,720	12,645
4 to 8 feet	0	0
8 to 11 feet	0	0
> 11 feet	0	0

Table 14 : Whites Complex; comparison between alternatives of projected fireline intensity 10 years post treatment.

Fireline Intensity	Modified Alt 2	Modified Alt 3
< 100 btu/ft/sec	12,720	12,645
100 to 500 btu/ft/sec	0	0
500 to 1000 btu/ft/sec	0	0
> 1000 btu/ft/sec	0	0

Cumulative Effects

Cumulative Effects are the same as described in the Fire and Fuels Report.

Modified Alternative 3

The direct and indirect effects of Modified Alternative 3 are anticipated to be similar to those described in Alternative 3, with a reduction in overall salvage harvest and associated fuels treatments to mitigate resource concerns on approximately 2,150 acres. In addition, a portion of hazardous fuels treatments (Wildland Urban Interface and Ridgetop treatments) and roadside fuels treatments from the Karuk Alternative (DEIS Appendix G) are also proposed within Modified Alternative 3. This would add additional fuels treatments to the Happy Camp Complex and Whites Fire project areas. Additional fuels treatments proposed in Alternative 5 for the Beaver Fire are also proposed under this alternative. Proposed fuels treatment activities are anticipated to reduce fire hazard and resistance to control for all fire areas.

The tables below break out each fire area and describe the effects of each alternative per fire area. In areas where a reduction in fuels treatment (hazardous fuels treatments, roadside fuels

treatments, site preparation, and salvage harvest) acres occur, snag densities, once fallen on the ground, will increase surface fuel loading, increase flame length and fireline intensity, and decrease fire suppression capabilities compared to alternative 2. The effects of this are described in the Environmental Consequences section of the Fire and Fuels Report.

Table 15: Projected flame lengths of treated acres under Modified Alternative 3, 10 years post-treatment

Flame Length	Project Area A: Beaver Fire	Project Area B: Happy Camp Complex	Project Area C: Whites Fire	Project Total
< 4 feet	4,695	20,870	12,645	38,480
4 to 8 feet	0	0	0	0
8 to 11 feet	0	0	0	0
> 11 feet	0	0	0	0

Table 16: Projected fireline intensities of treated acres under Modified Alternative 3, 10 years post-treatment

Fireline Intensity	Project Area A: Beaver Fire	Project Area B: Happy camp Complex	Project Area C: Whites Fire	Project Total
< 100 btu/ft/sec	4,695	20,870	12,645	38,480
100 to 500 btu/ft/sec	0	0	0	0
500 to 1000 btu/ft/sec	0	0	0	0
> 1000 btu/ft/sec	0	0	0	0

Project Area A: Beaver Fire

Direct Effects and Indirect Effects

The direct and indirect effects of Modified Alternative 3 are anticipated to be similar to those described in Alternative 3 of the DEIS. No salvage harvest would occur in the Beaver Fire. Opportunities to reduce fire spread and intensity within these units that buffer strategic fire management features are lost. Areas not being treated would see a decrease in fire suppression capability, safety, and an increase in fire hazard as described in the no action alternative. Additional hazardous fuels treatments, as proposed in Alternative 5, would occur under Modified Alternative 3. This would help offset the reduction in salvage harvest and associated fuels treatments in modifying fire spread and intensity across the Beaver Fire Area. In addition, in order to mitigate the effects of dropping salvage and site prep units in section 32 of the Doggett Creek block, a 200' fuels treatment strip would be implemented along the west and south borders of that section. This would be an overall reduction in fuels treatment effectiveness in meeting desired conditions for this area.

Table 17: Beaver Fire; modified alternatives projected flame lengths 10 years post treatment.

Flame Length	Modified Alt 2	Modified Alt 3
< 4 feet	4,300	4,695
4 to 8 feet	0	0
8 to 11 feet	0	0
> 11 feet	0	0

Table 18: Beaver Fire; modified alternatives projected fireline intensity 10 years post treatment.

Fireline Intensity	Modified Alt 2	Modified Alt 3
< 100 btu/ft/sec	4,300	4,695
100 to 500 btu/ft/sec	0	0
500 to 1000 btu/ft/sec	0	0
> 1000 btu/ft/sec	0	0

Cumulative Effects

Cumulative effects are the same as described in the Fire and Fuels Report.

Project Area B: Happy Camp Complex

Direct Effects and Indirect Effects

Modified Alternative 3 would have similar direct and indirect effects as described for Alternative 3 in the Fire and Fuels Resource Report. Compared to Alternative 3, the modified alternative would have a reduction in site preparation and salvage units of approximately 2,150 acres. In addition, wildlife retention areas and aquatic Riparian Reserves, where no salvage harvest or site preparation would occur within treatment units, would exist on approximately 1000 acres. This would result in those areas no longer meeting desired conditions for the project for the Fire and Fuels resource. Modified Alternative 3 would add approximately 695 acres of fuels treatment as proposed in the Karuk Alternative (DEIS Appendix G). This would have an increase in area meeting desired condition. Additional ridgetop, roadside, and Wildland Urban Interface treatments would decrease fire hazard and increase suppression capability in these areas.

Table 19: Happy Camp Complex; modified alternatives projected flame lengths 10 years post treatment.

Flame Length	Modified Alt 2	Modified Alt 3
< 4 feet	22,870	20,870
4 to 8 feet	0	0
8 to 11 feet	0	0
> 11 feet	0	0

Table 20: Happy Camp Complex; modified alternatives projected fireline intensity 10 years post treatment.

Fireline Intensity	Modified Alt 2	Modified Alt 3
< 100 btu/ft/sec	22,870	20,870
100 to 500 btu/ft/sec	0	0
500 to 1000 btu/ft/sec	0	0
> 1000 btu/ft/sec	0	0

Cumulative Effects

Cumulative effects are the same as described in the Fire and Fuels Report.

Project Area C: Whites Fire

Direct Effects and Indirect Effects

Modified Alternative 3 would have similar direct and indirect effects as described for Alternative 2 in the Fire and Fuels Report. Additional salvage units and site preparation units would be removed in Modified Alternative 2. The majority of these units were small in acreage and isolated in nature. Therefore, similar effects are anticipated to still be similar to those described for Alternative 2. Modified Alternative 3 would add approximately 55 acres of Wildland Urban Interface treatment proposed in the Karuk Alternative (DEIS Appendix G). This would improve meeting desired conditions for this relatively small area and provide additional benefit to the adjacent private land. Overall treatment effectiveness on the White Fire Project area would be similar to Alternative 2.

Table 21 : Whites Complex; modified alternatives projected flame lengths 10 years post treatment.

Flame Length	Modified Alt 2	Modified Alt 3
< 4 feet	12,720	12,645
4 to 8 feet	0	0
8 to 11 feet	0	0
> 11 feet	0	0

Table 22 : Whites Complex; comparison between alternatives of projected fireline intensity 10 years post treatment.

Fireline Intensity	Modified Alt 2	Modified Alt 3
< 100 btu/ft/sec	12,720	12,645
100 to 500 btu/ft/sec	0	0
500 to 1000 btu/ft/sec	0	0
> 1000 btu/ft/sec	0	0

Cumulative Effects

Cumulative Effects are the same as described in the Fire and Fuels Report.

III. Modification of Environmental Consequences by Fire Area since the Draft EIS

Alternative 1

Project Area A: Beaver Fire

The effects are the same as described in the Fire and Fuels report. There are currently 1,765 acres meeting desired conditions which means these acres will have a low fire hazard and a very low resistance to control for about 20 years post fire.

Project Area B: Happy Camp Complex

The effects are the same as described in the Fire and Fuels report. There are currently 6,895 acres meeting desired conditions which means these acres will have a low fire hazard and a very low resistance to control for about 20 years post fire.

Project Area B: Whites Fire

The effects are the same as described in the Fire and Fuels report. There are currently 3,740 acres meeting desired conditions which means these acres will have a low fire hazard and a very low resistance to control for about 20 years post fire.

Cumulative Effects

Project Area A: Beaver Fire

The McCollins Late Successional Reserve Enhancement project overlaps the spatial and temporal bounds with the Beaver fire area. This project will reduce fuel loading on about 50 acres within the fire area.

The majority of the rest of the burned area is owned by Fruit Growers Supply Company (FGS) and Michigan California Timber Company and located within the Beaver Fire Area. Both of these companies are either currently or planning to treat their land by conducting salvage operations on their respective properties. This accounts for about 9,900 acres in the Beaver fire area. It is understood that FGS is planning a series of fuel breaks within the ridge and road systems of the Beaver fire area; these lands are intermixed between National Forest System Land. Salvage operation of all trees are generally occurring on slopes less than 45% and commercial trees are being removed on slopes greater than 45%. After salvage operations are completed replanting is expected. It is also expected that herbicide treatments will be applied to the planted areas to reduce shrub growth. As a result of the operations expected on the privately owned lands these lands are expected to be relatively fire safe. This is primarily due to the removal or reduction of most of the dead and dying trees on these lands. When added to the

1,765 acres already meeting desired condition there will be 11,665 acres meeting desired condition over the next 20 years.

Project Area B: Happy Camp Complex

Happy Camp Fire Protection project, Phase II, Lake Mountain Foxtail Pine project, Lovers Canyon project and Thom Seider project overlap in space and time with the Happy Camp Complex area. These projects will reduce fuel loading on about 13,850 acres in the project area. When added to the 6,895 acres that are meeting desired condition currently there will be 20,745 acres meeting desired condition cumulatively.

Project Area B: Whites Fire

Eddy Late Successional Reserve project and Sawyers Bar Fuels Reduction project overlap with the project area. These projects will reduce fuel loading on about 5,000 acres in the fire area. When added to the 3,740 acres that are currently meeting desired condition there will be a total of 8,740 acres meeting desired condition.

Alternative 2

Project Area A: Beaver Fire

Direct Effects and Indirect Effects

There are currently 4,730 acres meeting desired conditions which means these acres will have a low fire hazard and a very low resistance to control for about 20 years post fire. Desired conditions are met in areas where fuel reduction treatments occur. Fuel reduction treatments include salvage, hazardous fuels treatments, and site preparation. There will be about 4,730 acres meeting purpose and need and desired conditions in the Beaver Fire area for alternative 2. Treatments would increase fire suppression capability and decrease fire severity. A reduction in fuel loading would allow strategic fuel breaks, Wildland Urban Interface, and roadside treatments to serve as long-term strategic areas to suppress wildfire and allow more management options for future fire and fuels treatments such as prescribed fire. Salvage and site preparation treatments would reduce heavy accumulations of fuels, and therefore, increase fire suppression capability. Maintaining fuels treatments would reduce the time and effort needed for future suppression actions; increasing the likelihood of success for containing and controlling wildfire. Maintaining fuels treatments would also create areas to more readily utilize prescribed fire. In addition, treatments would increase the safety to forest users, including future firefighting efforts. Within the Beaver Fire, direct and indirect effects would be similar to those described in the DEIS Fire and Fuels Report in the Environmental Consequences Section.

In areas not being treated, similar effects to those described in the No Action Alternative would be anticipated (DEIS Environmental Consequences Section). Fuel breaks would not serve as strategic areas to suppress fire or utilize prescribed fire in the future. There would be a reduction in treatment effectiveness around communities and ridgetops. Road systems would not be safe for ingress and egress and would not serve as holding features.

Large patches of high severity are not being treated in portions of the fire area. These large patches would not meet the purpose and need and desired condition into the future. Areas with more contiguous treatment would be more effective at meeting the purpose and need for the Fire

and Fuels resource. Snag retention areas within treatment units (i.e. aquatic riparian reserves and/or wildlife retention areas) would impact the treatment unit depending on size and placement of the leave area. Generally, larger snag retention areas would make the treatment unit less effective in meeting desired conditions. Retention areas would increase fuel loading adjacent to the treatment unit, increase fire hazard, and decrease suppression capability. In addition, leave areas would make it more difficult to implement treatments.

Retention areas are generally away from more strategic fuels areas such as key road systems and ridgetops. Overall, there would be a reduced effectiveness of treatment due to retention areas, however, areas such as ridges and roads would still generally meet desired conditions.

Project Area B: Happy Camp Complex

Areas not treated will have the same effects as described in alternative 1. The effects for acres treated are the same as described in the Fire and Fuel report. There are currently 23,610 acres meeting desired conditions which means these acres will have a low fire hazard and a very low resistance to control for about 20 years post fire.

Project Area B: Whites Fire

Areas not treated will have the same effects as described in alternative 1. The effects for acres treated are the same as described in the Fire and Fuel report. There are currently 12,830 acres meeting desired conditions which means these acres will have a low fire hazard and a very low resistance to control for about 20 years post fire.

Cumulative Effects

Project Area A: Beaver Fire

The McCollins Late Successional Reserve Enhancement project overlaps the spatial and temporal bounds with the Beaver fire area. This project will reduce fuel loading on about 50 acres within the fire area.

The majority of the rest of the burned area is owned by Fruit Growers Supply Company (FGS) and Michigan California Timber Company and located within the Beaver Fire Area. Both of these companies are either currently or planning to treat their land by conducting salvage operations on their respective properties. This accounts for about 9,900 acres in the Beaver fire area. It is understood that FGS is planning a series of fuel breaks within the ridge and road systems of the Beaver fire area; these lands are intermixed between National Forest System Land. Salvage operation of all trees are generally occurring on slopes less than 45% and commercial trees are being removed on slopes greater than 45%. After salvage operations are completed replanting is expected. It is also expected that herbicide treatments will be applied to the planted areas to reduce shrub growth. As a result of the operations expected on the privately owned lands these lands are expected to be relatively fire safe. This is primarily due to the removal or reduction of most of the dead and dying trees on these lands. When added to the 4,730 acres already meeting desired condition there will be 14,680 acres meeting desired condition over the next 20 years.

Project Area B: Happy Camp Complex

Happy Camp Fire Protection project, Phase II, Lake Mountain Foxtail Pine project, Lovers Canyon project and Thom Seider project overlap in space and time with the Happy Camp Complex area. These projects will reduce fuel loading on about 13,850 acres in the project area. When added to the 37,460 acres that are meeting desired condition currently there will be 23,610 acres meeting desired condition cumulatively.

Project Area B: Whites Fire

Eddy Late Successional Reserve project and Sawyers Bar Fuels Reduction project overlap with the project area. These projects will reduce fuel loading on about 5,000 acres in the fire area. When added to the 12,830 acres that are currently meeting desired condition there will be a total of 17,830 acres meeting desired condition.

Alternative 3

Direct Effects and Indirect Effects

Project Area A: Beaver Fire

The effects are the same as described in alternative 2. There are currently 3,870 acres meeting desired conditions which means these acres will have a low fire hazard and a very low resistance to control for about 20 years post fire.

Project Area B: Happy Camp Complex

The effects are the same as described in alternative 2. There are currently 22,580 acres meeting desired conditions which means these acres will have a low fire hazard and a very low resistance to control for about 20 years post fire.

Project Area B: Whites Fire

The effects are the same as described in alternative 2. There are currently 12,670 acres meeting desired conditions which means these acres will have a low fire hazard and a very low resistance to control for about 20 years post fire.

Cumulative Effects

Project Area A: Beaver Fire

The McCollins Late Successional Reserve Enhancement project overlaps the spatial and temporal bounds with the Beaver fire area. This project will reduce fuel loading on about 50 acres within the fire area.

The majority of the rest of the burned area is owned by Fruit Growers Supply Company (FGS) and Michigan California Timber Company and located within the Beaver Fire Area. Both of

these companies are either currently or planning to treat their land by conducting salvage operations on their respective properties. This accounts for about 9,900 acres in the Beaver fire area. It is understood that FGS is planning a series of fuel breaks within the ridge and road systems of the Beaver fire area; these lands are intermixed between National Forest System Land. Salvage operation of all trees are generally occurring on slopes less than 45% and commercial trees are being removed on slopes greater than 45%. After salvage operations are completed replanting is expected. It is also expected that herbicide treatments will be applied to the planted areas to reduce shrub growth. As a result of the operations expected on the privately owned lands these lands are expected to be relatively fire safe. This is primarily due to the removal or reduction of most of the dead and dying trees on these lands. When added to the 3,870 acres already meeting desired condition there will be 13,820 acres meeting desired condition over the next 20 years.

Project Area B: Happy Camp Complex

Happy Camp Fire Protection project, Phase II, Lake Mountain Foxtail Pine project, Lovers Canyon project and Thom Seider project overlap in space and time with the Happy Camp Complex area. These projects will reduce fuel loading on about 13,850 acres in the project area. When added to the 22,580 acres that are meeting desired condition currently there will be 36,430 acres meeting desired condition cumulatively.

Project Area B: Whites Fire

Eddy Late Successional Reserve project and Sawyers Bar Fuels Reduction project overlap with the project area. These projects will reduce fuel loading on about 5,000 acres in the fire area. When added to the 12,670 acres that are currently meeting desired condition there will be a total of 17,670 acres meeting desired condition.

Alternative 4

Direct Effects and Indirect Effects

Project Area A: Beaver Fire

The effects are the same as described in alternative 2. There are currently 4,620 acres meeting desired conditions which means these acres will have a low fire hazard and a very low resistance to control for about 20 years post fire.

Project Area B: Happy Camp Complex

The effects are the same as described in alternative 2. There are currently 22,320 acres meeting desired conditions which means these acres will have a low fire hazard and a very low resistance to control for about 20 years post fire.

Project Area B: Whites Fire

The effects are the same as described in alternative 2. There are currently 12,830 acres meeting desired conditions which means these acres will have a low fire hazard and a very low resistance to control for about 20 years post fire.

Cumulative Effects

Project Area A: Beaver Fire

The McCollins Late Successional Reserve Enhancement project overlaps the spatial and temporal bounds with the Beaver fire area. This project will reduce fuel loading on about 50 acres within the fire area.

The majority of the rest of the burned area is owned by Fruit Growers Supply Company (FGS) and Michigan California Timber Company and located within the Beaver Fire Area. Both of these companies are either currently or planning to treat their land by conducting salvage operations on their respective properties. This accounts for about 9,900 acres in the Beaver fire area. It is understood that FGS is planning a series of fuel breaks within the ridge and road systems of the Beaver fire area; these lands are intermixed between National Forest System Land. Salvage operation of all trees are generally occurring on slopes less than 45% and commercial trees are being removed on slopes greater than 45%. After salvage operations are completed replanting is expected. It is also expected that herbicide treatments will be applied to the planted areas to reduce shrub growth. As a result of the operations expected on the privately owned lands these lands are expected to be relatively fire safe. This is primarily due to the removal or reduction of most of the dead and dying trees on these lands. When added to the 4,620 acres already meeting desired condition there will be 14,570 acres meeting desired condition over the next 20 years.

Project Area B: Happy Camp Complex

Happy Camp Fire Protection project, Phase II, Lake Mountain Foxtail Pine project, Lovers Canyon project and Thom Seider project overlap in space and time with the Happy Camp Complex area. These projects will reduce fuel loading on about 13,850 acres in the project area. When added to the 22,320 acres that are meeting desired condition currently there will be 36,170 acres meeting desired condition cumulatively.

Project Area B: Whites Fire

Eddy Late Successional Reserve project and Sawyers Bar Fuels Reduction project overlap with the project area. These projects will reduce fuel loading on about 5,000 acres in the fire area. When added to the 12,830 acres that are currently meeting desired condition there will be a total of 17,830 acres meeting desired condition.

Alternative 5

Project Area A: Beaver Fire

The effects are the same as described in alternative 2. There are currently 5,900 acres meeting desired conditions which means these acres will have a low fire hazard and a very low resistance to control for about 20 years post fire.

Project Area B: Happy Camp Complex

The effects are the same as described in alternative 2. There are currently 13,300 acres meeting desired conditions which means these acres will have a low fire hazard and a very low resistance to control for about 20 years post fire.

Project Area B: Whites Fire

The effects are the same as described in alternative 2. There are currently 11,420 acres meeting desired conditions which means these acres will have a low fire hazard and a very low resistance to control for about 20 years post fire.

Cumulative Effects

Project Area A: Beaver Fire

The McCollins Late Successional Reserve Enhancement project overlaps the spatial and temporal bounds with the Beaver fire area. This project will reduce fuel loading on about 50 acres within the fire area.

The majority of the rest of the burned area is owned by Fruit Growers Supply Company (FGS) and Michigan California Timber Company and located within the Beaver Fire Area. Both of these companies are either currently or planning to treat their land by conducting salvage operations on their respective properties. This accounts for about 9,900 acres in the Beaver fire area. It is understood that FGS is planning a series of fuel breaks within the ridge and road systems of the Beaver fire area; these lands are intermixed between National Forest System Land. Salvage operation of all trees are generally occurring on slopes less than 45% and commercial trees are being removed on slopes greater than 45%. After salvage operations are completed replanting is expected. It is also expected that herbicide treatments will be applied to the planted areas to reduce shrub growth. As a result of the operations expected on the privately owned lands these lands are expected to be relatively fire safe. This is primarily due to the removal or reduction of most of the dead and dying trees on these lands. When added to the 5,900 acres already meeting desired condition there will be 15,850 acres meeting desired condition over the next 20 years.

Project Area B: Happy Camp Complex

Happy Camp Fire Protection project, Phase II, Lake Mountain Foxtail Pine project, Lovers Canyon project and Thom Seider project overlap in space and time with the Happy Camp Complex area. These projects will reduce fuel loading on about 13,850 acres in the project area.

When added to the 13,300 acres that are meeting desired condition currently there will be 27,150 acres meeting desired condition cumulatively.

Project Area B: Whites Fire

Eddy Late Successional Reserve project and Sawyers Bar Fuels Reduction project overlap with the project area. These projects will reduce fuel loading on about 5,000 acres in the fire area. When added to the 11,420 acres that are currently meeting desired condition there will be a total of 16,420 acres meeting desired condition.

Alternative 2 as Modified

Project Area A: Beaver Fire

The effects are the same as described in alternative 2. There are currently 4,300 acres meeting desired conditions which means these acres will have a low fire hazard and a very low resistance to control for about 20 years post fire.

Project Area B: Happy Camp Complex

The effects are the same as described in alternative 2. There are currently 22,870 acres meeting desired conditions which means these acres will have a low fire hazard and a very low resistance to control for about 20 years post fire.

Project Area B: Whites Fire

The effects are the same as described in alternative 2. There are currently 12,720 acres meeting desired conditions which means these acres will have a low fire hazard and a very low resistance to control for about 20 years post fire.

Cumulative Effects

Project Area A: Beaver Fire

The McCollins Late Successional Reserve Enhancement project overlaps the spatial and temporal bounds with the Beaver fire area. This project will reduce fuel loading on about 50 acres within the fire area.

The majority of the rest of the burned area is owned by Fruit Growers Supply Company (FGS) and Michigan California Timber Company and located within the Beaver Fire Area. Both of these companies are either currently or planning to treat their land by conducting salvage operations on their respective properties. This accounts for about 9,900 acres in the Beaver fire area. It is understood that FGS is planning a series of fuel breaks within the ridge and road systems of the Beaver fire area; these lands are intermixed between National Forest System Land. Salvage operation of all trees are generally occurring on slopes less than 45% and commercial trees are being removed on slopes greater than 45%. After salvage operations are completed replanting is expected. It is also expected that herbicide treatments will be applied to the planted areas to reduce shrub growth. As a result of the operations expected on the privately owned lands these lands are expected to be relatively fire safe. This is primarily due to the

removal or reduction of most of the dead and dying trees on these lands. When added to the 4,300 acres already meeting desired condition there will be 14,250 acres meeting desired condition over the next 20 years.

Project Area B: Happy Camp Complex

Happy Camp Fire Protection project, Phase II, Lake Mountain Foxtail Pine project, Lovers Canyon project and Thom Seider project overlap in space and time with the Happy Camp Complex area. These projects will reduce fuel loading on about 13,850 acres in the project area. When added to the 22,870 acres that are meeting desired condition currently there will be 36,720 acres meeting desired condition cumulatively.

Project Area B: Whites Fire

Eddy Late Successional Reserve project and Sawyers Bar Fuels Reduction project overlap with the project area. These projects will reduce fuel loading on about 5,000 acres in the fire area. When added to the 12,720 acres that are currently meeting desired condition there will be a total of 17,720 acres meeting desired condition.

Alternative 3 as Modified

Project Area A: Beaver Fire

The effects are the same as described in alternative 2. There are currently 4,695 acres meeting desired conditions which means these acres will have a low fire hazard and a very low resistance to control for about 20 years post fire.

Project Area B: Happy Camp Complex

The effects are the same as described in alternative 2. There are currently 20,870 acres meeting desired conditions which means these acres will have a low fire hazard and a very low resistance to control for about 20 years post fire.

Project Area B: Whites Fire

The effects are the same as described in alternative 2. There are currently 12,645 acres meeting desired conditions which means these acres will have a low fire hazard and a very low resistance to control for about 20 years post fire.

Cumulative Effects

Project Area A: Beaver Fire

The McCollins Late Successional Reserve Enhancement project overlaps the spatial and temporal bounds with the Beaver fire area. This project will reduce fuel loading on about 50 acres within the fire area.

The majority of the rest of the burned area is owned by Fruit Growers Supply Company (FGS) and Michigan California Timber Company and located within the Beaver Fire Area. Both of

these companies are either currently or planning to treat their land by conducting salvage operations on their respective properties. This accounts for about 9,900 acres in the Beaver fire area. It is understood that FGS is planning a series of fuel breaks within the ridge and road systems of the Beaver fire area; these lands are intermixed between National Forest System Land. Salvage operation of all trees are generally occurring on slopes less than 45% and commercial trees are being removed on slopes greater than 45%. After salvage operations are completed replanting is expected. It is also expected that herbicide treatments will be applied to the planted areas to reduce shrub growth. As a result of the operations expected on the privately owned lands these lands are expected to be relatively fire safe. This is primarily due to the removal or reduction of most of the dead and dying trees on these lands. When added to the 4,695 acres already meeting desired condition there will be 14,465 acres meeting desired condition over the next 20 years.

Project Area B: Happy Camp Complex

Happy Camp Fire Protection project, Phase II, Lake Mountain Foxtail Pine project, Lovers Canyon project and Thom Seider project overlap in space and time with the Happy Camp Complex area. These projects will reduce fuel loading on about 13,850 acres in the project area. When added to the 20,870 acres that are meeting desired condition currently there will be 34,720 acres meeting desired condition cumulatively.

Project Area B: Whites Fire

Eddy Late Successional Reserve project and Sawyers Bar Fuels Reduction project overlap with the project area. These projects will reduce fuel loading on about 5,000 acres in the fire area. When added to the 12,645 acres that are currently meeting desired condition there will be a total of 17,645 acres meeting desired condition.

Differences Between Alternatives

Project Area A: Beaver Fire

Alternatives 2 through 5 are described in the DEIS Fire and Fuels Report. The Fire Behavior Synopsis in the Fire and Fuels Report for Alternative 2 would describe the expected effects for the Beaver Fire. Alternative 4 would have the same proposed actions as described in Alternative 2, and therefore, the same effects. With the exception of the removal of salvage and site preparation units in section 32 and 4 of Doggett Creek, direct and indirect effects will be comparable in type and acreage described in Alternative 2. In order to mitigate the effects of dropping salvage and site preparation units in Section 32 and 4, a 200' fuels treatment strip would be implemented along the west and south borders of Section 32. This would be an overall reduction in fuels treatment effectiveness in meeting desired conditions for this area. Alternative 5 would be similar to Alternative 2 with additional fuels treatments proposed. Additional fuels treatments include fuel breaks and prescribed fire to protect private timberlands.

Alternative 3 and Alternative 3 modified would remove all salvage harvest activities from the Beaver Fire area. Areas not being treated are anticipated to be similar to those described in the no action. Fuel loading in these areas would increase through time as snags decay and fall. Suppression capabilities would therefore decrease while fire severity and behavior would likely

increase. Alternative 3 modified would add additional fuels treatments proposed in Alternative 5. This would increase meeting desired conditions for the additional fuels treatments proposed. All action alternatives would have leave areas where no treatment would occur within aquatic Riparian Reserves and inner gorges within salvage harvest units. This would result in reduced effectiveness of unit treatments and is described in acres and percentage of area below.

Table 23 : Beaver Fire Retention Areas in Acreage and Percent of Treatment Area

	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Modified Alt 2	Modified Alt 3
Total Salvage Harvest (Gross)	860	0	750	830	340	0
Acres of Retention	370	0	320	340	150	0
Percent Area of Retention	43%	0	43%	41%	44%	0

Further descriptions and analysis can be found the Fire and Fuels Report.

Project Area B: Happy Camp Complex

Alternatives 2 through 5 are described in the DEIS Fire and Fuels Report. The Fire Behavior Synopsis in the Fire and Fuels Report for Alternative 2 would describe the expected effects for the Happy Camp Fire. Modified Alternative 2 would have similar effects to those described in Alternative 2 with only a slight reduction in overall treated area.

Alternative 3, Modified Alternative 3, and Alternative 4 would all have a reduction in fuel treatment area to reduce impacts to other resources. There would be an overall reduction in fuels treatment effectiveness in meeting desired conditions and are primarily in salvage and site preparation units. Modified Alternative 3 would add approximately 695 acres to fuels treatment in the Happy Camp Fire area proposed in the Karuk Alternative. This would increase the total area meeting desired conditions.

Alternative 5 would propose no salvage harvest in Late Successional Reserves. This would greatly reduce the amount of fuels treatment in the Happy Camp Fire area. Salvage units and associated fuels treatments removed from this alternative would be expected to significantly reduce opportunities to modify fire spread. There would be an increase in fuel loading, increase if fire severity and a reduction in fire suppression capability. For much of the Happy Camp Fire area, it would be expected to be comparable to taking no action.

Additional areas would no longer be treated in Modified Alternative 3. Modified Alternative 3 would remove an additional 2,150 acres or 25 percent of area treated by salvage harvest and site preparation compared to Alternative 3. This treatment reduction is primarily in the Walker and Grider Creek drainages. Fuels treatment effectiveness in meeting desired conditions would be reduced. Large high severity areas not proposed for treatment within the Walker and Grider drainages would not meet desired conditions and may not return to forested stands for a

significant amount of time (see Vegetation Report). More strategic areas, such as roads and ridgetops, would generally still be effective because units dropped and retention areas for Modified Alternative 3 were largely outside of these areas. Overall purpose and need including forest resiliency would be reduced from these actions for the Fire and Fuels resource. In addition, implementation would also be more difficult in areas where numerous non-treatment patches exist within a treatment unit.

All action alternatives would have leave areas where no treatment would occur within aquatic Riparian Reserves and inner gorges within salvage harvest units. Modified Alternative 3 would add additional retention areas for the Wildlife resource. This increase in retention areas is primarily in the Walker and Grider Creek drainages. Fuels treatment effectiveness in meeting desired conditions would be reduced in retention areas, and immediately adjacent areas, due to heavy fuel loading. More strategic areas such as roads and ridgetops would still be effective because leave areas were largely outside of these areas. Overall purpose and need including forest resiliency would be reduced from these actions for the Fire and Fuels resource. In addition, implementation would also be more difficult in areas where numerous non-treatment patches exist within a treatment unit. This would result in reduced effectiveness of unit treatments and is described in acres and percentage of area below.

Table 24 : Happy Camp Fire Retention Areas in Acreage and Percent of Treatment Area

	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Modified Alt 2	Modified Alt 3
Total Salvage Harvest (Gross)	9390	8360	8100	2440	8650	6210
Acres of Retention	3680	3110	3220	1040	3240	1010
Percent Area of Retention	39%	37%	40%	43%	37%	16%

For further description and analysis, see the Fire and Fuels Report.

Project Area C: Whites Fire

Alternatives 2 through 5 are described in the DEIS Fire and Fuels Report. The Fire Behavior Synopsis in the Fire and Fuels Report for Alternative 2 would describe the expected effects for the Whites Fire area. Alternative 3, Alternative 4, and Modified Alternative 2 would have similar treatments and effects as described in Alternative 2.

Modified Alternative 3 would remove some salvage units and site preparation units. The majorities of these units were small acreage and isolated in nature. Therefore, similar effects would still be anticipated to those described in Alternative 2. The stand scale of units no longer being treated would no longer meet the desired condition. Modified Alternative 3 proposes additional hazardous fuels treatment as proposed in the Karuk Alternative (DEIS Appendix G). Approximately 55 acres of treatment in the Rainbow Mine area would occur. This would improve meeting desired conditions for this small area and provide benefit to the adjacent private

land. Overall treatment effectiveness on the White Fire project area would be similar to Alternative 2.

Alternative 5 would remove all site preparation and all but 30 acres of salvage units with associated fuels treatment. Alternative 5 would continue to have hazardous fuels treatments (WUI, prescribed burning, ridgetop treatments, etc.) and roadside fuels treatments. The removal of salvage units would decrease firefighter safety and suppression capability in the future. Fuel treatments effectiveness would decrease across the Whites Fire area. Hazardous fuels treatments, primarily prescribed fire, overlapped salvage units dropped in this alternative. This would dampen the effect of future fuel loading and fire severity. However, future fires would likely be more difficult to control and require more time and effort of resources due to the safety exposure to snags and other anticipated fire hazards associated with accumulation of large fuels.

All action alternatives would have leave areas where no treatment would occur within aquatic Riparian Reserves and inner gorges within salvage harvest units. This would result in reduced effectiveness of unit treatments and is described in acres and percentage of area below.

Table 25 : Whites Fire Retention Areas in Acreage and Percent of Treatment Area

	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Modified Alt 2	Modified Alt 3
Total Salvage Harvest (Gross)	850	680	850	70	740	680
Acres of Retention	420	290	420	40	330	130
Percent Area of Retention (Net)	49%	43%	49%	57%	45%	19%

Comparison of Alternatives

Table 26: Comparison of effects by alternative for Fire and Fuels Resource.

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Modified Alt 2	Modified Alt 3
Beaver	There will be 1,765 acres meeting desired condition for fire and fuels resources.	There will be 4,730 acres meeting desired condition for fire and fuels resources.	There will be 3,870 acres meeting desired condition for fire and fuels resources.	There will be 4,620 acres meeting desired condition for fire and fuels resources.	There will be 5,900 acres meeting desired condition for fire and fuels resources.	There will be 4,300 acres meeting desired condition for fire and fuels resources.	There will be 4,695 acres meeting desired condition for fire and fuels resources.
Happy Camp	There will be 6,895 acres meeting desired condition for fire and fuels resources.	There will be 23,610 acres meeting desired condition for fire and fuels resources.	There will be 22,580 acres meeting desired condition for fire and fuels resources.	There will be 22,320 acres meeting desired condition for fire and fuels resources.	There will be 13,300 acres meeting desired condition for fire and fuels resources.	There will be 22,870 acres meeting desired condition for fire and fuels resources.	There will be 20,870 acres meeting desired condition for fire and fuels resources.
Whites	There will be 3,740 acres meeting	There will be 12,830 acres	There will be 12,670 acres	There will be 12,830 acres	There will be 11,420 acres	There will be 12,720 acres	There will be 12,645 acres

Modification of Environmental Consequences by Fire Area since the Draft EIS

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Modified Alt 2	Modified Alt 3
	desired condition for fire and fuels resources.	meeting desired condition for fire and fuels resources.	meeting desired condition for fire and fuels resources.	meeting desired condition for fire and fuels resources.	meeting desired condition for fire and fuels resources.	meeting desired condition for fire and fuels resources.	meeting desired condition for fire and fuels resources.

Compliance with law, regulation, policy, and the Forest Plan

There is no change to compliance with law, regulation, policy and Forest Plan from the Fire and Fuels Resource Report. All alternatives comply as described in the Forest Plan consistency checklist.