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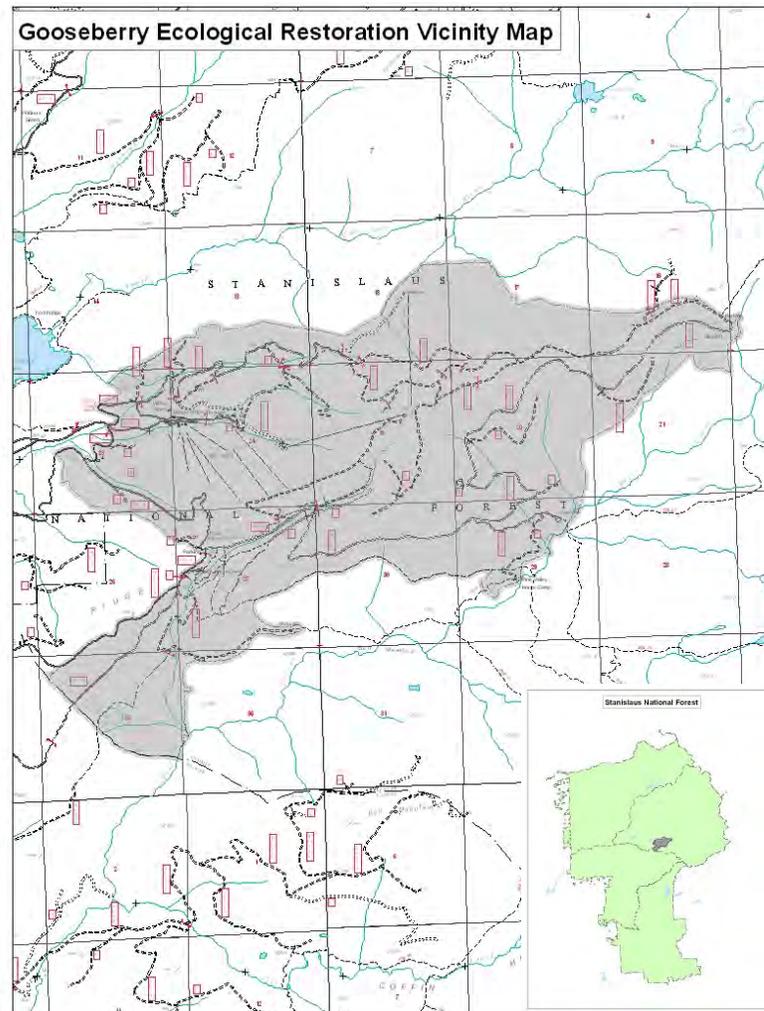
May 2013

Gooseberry Ecological Restoration (30270)

Environmental Assessment

Stanislaus National Forest
Summit Ranger District
Tuolumne County, CA

Sections 13-14, 23-26, 35-36, Township 4 North, Range 18 East;
Sections 15-21, 29-30, Township 4 North, Range 19 East



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Tuolumne County, California

1. Introduction

The Forest Service prepared this Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This Environmental Assessment discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and two additional alternatives (No Action and Non-Commercial Funding). Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Summit Ranger District Office in Pinecrest, California.

1.1 BACKGROUND

The project area contains a variety of vegetation associations across its elevation range from 6,300 to 8,600 feet. At the lower elevations vegetation communities include oak/pine and mixed conifer. Red fir dominates the upper montane forest communities at the higher elevations. Numerous meadows and aspen stands are located throughout the project area. Land Allocations and Management Areas within the project area include: Wildland Urban Intermix (WUI) Defense and Threat Zone, Proposed Wild and Scenic River, California Spotted Owl Protected Activity Center (PAC), Home Range Core Area (HRCA), Northern Goshawk PAC, Old Forest Emphasis Area, Riparian Conservation Area (RCA), Critical Aquatic Refuge (CAR), Near Natural, Scenic Corridor, Developed Recreation Sites and Winter Sports Site. Also, two Inventoried Roadless Areas and the Emigrant Wilderness area border the project boundary.

The Emigrant Trail passed through the area in the 1850s, and livestock have grazed the area since that time. The Dodge Ridge Winter Sports Area (Dodge Ridge) has continually operated in the area since established in the 1950s. Beginning in the 1960s, periodic timber operations occurred throughout the project area to achieve various management objectives, such as removal of hazard trees, forest health, and timber production.

Currently, the project area receives high recreation use year round. Recreation opportunities include scenic viewing, hiking, biking, camping, horseback riding, and downhill and cross country skiing. Recreation facilities within the project area in addition to Dodge Ridge include: three popular trailheads that access the Emigrant Wilderness, Aspen Pack Station, and two developed horse camps.

The Central Stanislaus Watershed Assessment (CSWA) evaluated portions of the North Fork Tuolumne River and South Fork Stanislaus River watersheds located within the project area (USDA 2002). The Clavey River Ecosystem Project (CREP), a collaborative group of volunteers, assessed the Clavey River watershed, including those portions within the project area (CREP 2008). These assessments defined existing and desired conditions for water/riparian, fire/fuels, vegetation, wildlife, recreation, and road/trail elements. They identified management opportunities where desired conditions are not currently met, such as: moving tree species composition and structure toward the potential natural vegetation types; lowering stand densities to reduce risk of mortality; restoring aspen and riparian vegetation; improving meadow habitat and condition; reducing fuel loads in the lower

elevations; improving wildlife habitat, treating noxious weeds; and addressing resource impacts from roads, trails and recreation uses.

1.2 FOREST PLAN DIRECTION

The Forest Service completed the Stanislaus National Forest Land and Resource Management Plan (Forest Plan) on October 28, 1991. The Stanislaus National Forest “Forest Plan Direction” (USDA 2010a) presents the current Forest Plan management direction, based on the original Forest Plan as amended. The Forest Plan Direction that applies to this project includes forestwide standards and guidelines (p. 33-64); management area direction for Wild and Scenic Rivers and Proposed Wild and Scenic Rivers (p. 111-118), Near Natural (p. 119-122), Wildlife (p. 123-127), Scenic Corridor (p. 155-160), General Forest (p. 161-164), Developed Recreation Sites (p. 165-169), and Winter Sports Sites (p. 177-180); and, land allocation direction for California Spotted Owl and Northern Goshawk Protected Activity Centers (p. 183-186); California Spotted Owl Home Range Core Areas (p. 188-189); Wildland Urban Intermix (p. 189-190); General Forest (p. 191); Riparian Conservation Areas (p. 191-195); and, Critical Aquatic Refuges (p. 196)].

The proposed actions respond to the goals and objectives outlined in the Forest Plan and help move the project area toward the desired conditions described in the Forest Plan, CSWA and CREP. The Forest Plan identifies management goals and strategies, with an emphasis on old forest ecosystems and associated species, aquatic/riparian/meadow ecosystems and associated species, fire and fuels, noxious weeds and hardwood ecosystems (USDA 2010a, p. 11-15).

1.3 PURPOSE AND NEED FOR ACTION

The purpose of this initiative is to retain and/or re-establish the ecological resilience of this landscape to achieve long-term sustainability and to provide a broad range of ecological services (example - clean water). Ecological restoration is the process of assisting the recovery of resilience and the adaptability of ecosystems that have been degraded, damaged, or destroyed. Ecological restoration focuses on establishing the composition, structure, pattern, and ecological processes necessary to facilitate terrestrial and aquatic ecosystem sustainability, resilience, and health under current and future conditions (USDA 2011).

The Gooseberry Ecological Restoration (Gooseberry) project focuses on reestablishing species composition, structure, and pattern; hydrologic function; and ecological processes necessary to make terrestrial and aquatic ecosystems sustainable, resilient and healthy under current and future conditions. Shifting stands toward the desired condition (closer to the historical condition) by modifying species composition, and stand structure and complexity to improve wildlife habitat within the project area. A healthy and resilient landscape would have greater capacity to survive natural disturbances and large scale threats to sustainability, such as fire, drought, and insect and disease infestations. This is especially critical with changing and uncertain future environmental conditions such as those driven by climate change and increasing human use.

Specific goals for the Gooseberry project include:

1. **Forest Health and Restoration:** Proposed thinning would reduce overall stand densities; increase species diversity; and lessen the impacts of dwarf mistletoe, annosum root disease, white pine blister rust, cytospora canker, fir engravers and bark beetles especially during periods of drought. Improve and promote forest health and resiliency by: 1) moving stand structure and species composition toward the potential natural vegetation identified in the CSWA and CREP assessments; 2) reducing stand densities to minimize elevated levels of insect- and drought-related mortality; and 3) enhancing or maintaining shade intolerant pines and hardwoods.

Within plantations an additional goal is to accelerate the development of old forest characteristics. Thinning would reduce the impacts of pathogens by removing infected trees, reducing inter-tree competition, and increasing forest diversity and heterogeneity (species composition, size class, and stand structure). Thinning would also accelerate development of healthy forest conditions that are resilient, diverse, and sustainable for the long-term to support wildlife species dependent upon old growth characteristics.

2. **Re-introduce Fire:** Provide for the re-introduction of fire (prescribed fire and/or wildfire managed to achieve multiple resource objectives) to re-establish fuel profiles and vegetative conditions more characteristic of historic fire regimes, eventually allowing fire to function as a natural process. Areas proposed for prescribed fire were determined to be outside their historic fire regimes due to the long absence of fire. Prescribed fire would reduce surface and ladder fuels, lowering the risk of severe fire behavior, promote fire-tolerant species (pine and oak), assist in restoring historic species composition and forest structure, and provide for the health and safety of firefighters and the public in the event a wildfire occurs.
3. **Aspen Restoration:** Promote aspen by releasing existing aspen stems, increasing aspen root system vigor, and stimulating regeneration, by removing encroaching conifers.
4. **Meadow Restoration:** Restore meadow conditions to achieve and maintain high ecological function. This would include filling gullies and return streambeds to their original elevations.
5. **Road, Trail and Recreation:** Reduce resource impacts from existing roads, trails and recreation sites. The campgrounds currently lack defined boundaries resulting in uncontrolled expansion of the sites, encroachment into protected species habitats, and increased areas of de-vegetation and soil compaction. Forest vegetation cover in developed recreation sites (Crabtree Trailhead, Kerrick Corral Horse Camp, and Pine Valley Horse Camp) is deteriorating and creating increased hazards to site users. The tree mortality is reducing shade availability within sites as well as reducing vertical diversity and screening between sites.
6. **Noxious Weed Eradication:** Prevent the spread of ox-eye daisy down the Clavey River and South Fork Stanislaus River watersheds, which results in the degradation of habitats.

1.4 PROPOSED ACTION

The Proposed Action is summarized below. Chapter 2, Alternative 1 (Proposed Action) provides a more detailed description. The Proposed Action would implement restoration treatments on 2,860 acres to improve or restore ecological function and resilience, and move the project area toward desired conditions. Treatment activities include: thinning 2,372 acres (includes restoration of aspen stands and meadows, enhancement of pine and oaks, forest health treatments to reduce amplified pathogen levels and impacts, and improve stand resiliency to disturbance); prescribed burning 2,271 acres (includes underburning, jackpot burning and pile burning to return fire to the ecosystem); meadow restoration on 15 acres (includes stabilization and filling of gullies to raise the water table and re-wet the meadows, and removal of encroaching conifers); maintenance on roads; decommissioning unneeded roads and trails; delineating recreation site boundaries; and removing known populations of noxious weeds.

To achieve the above ecological restoration goals, vegetation treatments would be developed using the concepts described in the Pacific Southwest Research Station's General Technical Report 220 and 237 (GTR 220 and GTR 237) "An Ecosystem Management Strategy for Sierran Mixed-Conifer Forests" (USDA 2010b) and Managing Sierra Nevada Forests (USDA 2012), and information from the Pacific Southwest Research Station regarding stand patchiness and variability of forest structure as identified in the adjacent Stanislaus-Tuolumne Experimental Forest (Knapp, unpublished data).

Treatments based on these concepts and information would shift these areas toward a more resilient and sustainable stand structure by increasing stand heterogeneity (the quality of being diverse and consisting of dissimilar elements), and shifting species composition toward a condition closer to the historic levels.

1.5 DECISION FRAMEWORK

As the Responsible Official, the Forest Supervisor will make a decision based on review of this EA and resource reports. Given the purpose and need, the Responsible Official reviews the proposed action and the other alternatives and may decide to: (1) select the proposed action; (2) select the other action alternative; (3) select one of the alternatives after modifying the alternative with additional mitigating measures or combination of activities from other alternatives; or (4) select the no action alternative, choosing to take no action at this time. In making this decision, the Forest Supervisor will consider such questions as: (1) How well does the selected alternative meet the purpose and need; (2) How well does the selected alternative move the project area toward the desired conditions established in the Forest Plan; and (3) Does the selected alternative mitigate potential adverse effects?

The Responsible Official also determines whether the selected alternative would have a significant impact on the quality of the human environment or not. If a determination is made that the impact is not significant, then a "Finding of No Significant Impact" (FONSI) would be prepared, and the decision would be documented in a Decision Notice (FSH, 1909.15, 43.2). Significant impacts on the quality of the human environment would require the preparation of an Environmental Impact Statement (40 CFR 1501.4).

1.6 PUBLIC INVOLVEMENT

The Forest Service first listed the Gooseberry project in the April 2010 issue of the Stanislaus National Forest Schedule of Proposed Actions (SOPA). The Forest distributes the SOPA to about 160 parties and it is available on the internet [<http://www.fs.fed.us/sopa/forest-level.php?110516>].

The Forest conducted three field trips in the project area to discuss the ecological issues present and potential treatments. Dodge Ridge representatives attended the first trip on October 21, 2009. Central Sierra Environmental Resource Center (CSERC) representatives attended the second trip on October 29, 2009. CSERC and Audubon Society representatives attended the third trip on November 3, 2010. The Forest also met with a representative of Aspen Meadows Pack Station on May 24, 2010.

On March 23, 2011 the Forest sent a scoping letter to 16 individuals, affected permittees, organizations, agencies and Tribes interested in this project. The letter requested comments on the Proposed Action between March 24 and April 23, 2011. Seven interested parties submitted letters, e-mails or verbal comments. A Scoping Summary (available in the project record) identifies each commenter with their specific comments followed by a determination of relevancy and a brief response by the Forest Service.

1.7 ISSUES

As a result of scoping, public responses generated issues related to this proposal. Issues form the basis for the environmental analysis and represent the topics which will be further investigated to disclose the potential effects, or unintended consequences, which may result from implementation of the proposed action or alternatives. Additionally, the analysis provides the opportunity to assess methods which may allow the potential adverse effects to be reduced or mitigated.

The Forest Service reviewed comments and separated the issues into two groups: relevant issues and non-relevant issues. **Relevant Issues** are used to formulate alternatives, prescribe mitigation measures, or analyze environmental effects. Issues are relevant because of the extent of their geographic distribution, the duration of their effects, or the intensity of interest or resource conflicts. **Non-Relevant Issues** are identified as those: a) outside the scope of the proposed action; b) already decided by law, regulation, Forest Plan, or other higher level decision; c) irrelevant to the decision to be made; d) conjectural and not supported by scientific or factual evidence; or e) acknowledge a general comment or concern.

The Forest Service identified two relevant issues raised during scoping: 1) maintaining Visual Quality; and, 2) impacts on operations and visitor use for an existing Winter Sports Resort special use permits (see 3.1 Effects Related to Issues). A list of non-relevant issues and reasons regarding their categorization as non-relevant are in the project record. Although non-relevant issues are not used to formulate alternatives or prescribe mitigation measures, the EA will disclose all environmental effects including any related to non-relevant issues.

2. Alternatives

This section describes and compares the alternatives considered for the Gooseberry project. It presents the alternatives in comparative form, defining the differences between each alternative and providing a clear basis for choice among options by the Responsible Official and the public. It includes the alternatives considered in detail; design elements common to all action alternatives; alternatives considered but eliminated from detailed study; and, a comparison of alternatives. Some of the information used to compare the alternatives is based upon the design of the alternative (i.e. projected reduction in erosion, amount of increased tree vigor, safe re-introduction of fire) and some of the information is based upon the environmental, social and economic effects of implementing each alternative (i.e. the cost of sawlog and biomass removal versus biomass removal only).

2.1 ALTERNATIVES CONSIDERED IN DETAIL

The action alternatives (Alternatives 1 and 3) and the no action alternative (Alternative 2) are considered in detail. The no action alternative serves as a baseline for comparison among the alternatives (73 Federal Register 143, July 24, 2008; p. 43084-43099). The following sections describe each of the alternatives considered in detail (see map package).

Alternative 1 (Proposed Action)

The Proposed Action would treat 34 stands and 46 plantations. Table 1 displays treatments by stand and Table 2 shows treatments by plantation units. Treatment objectives were determined through site specific analysis based on Forest Plan land allocation/management area direction and the CSWA and CREP assessments of existing conditions and desired conditions. Treatments will utilize whole tree removal, except where lop and scatter or pile and burn are indicated in Tables 1 and 2.

All vegetation management treatments would meet the following criteria with the following exceptions: aspen and meadow treatments, Stand 55, and adjacent to six plantations where heavy dwarf mistletoe infection in overstory trees is a forest health issue (all described in more detail below and fall under SNFPA, Standard and Guideline 9, p. 51 [USDA 2004]):

- Maintain a minimum of 40 percent canopy cover.
- Retain all trees 30 inches diameter breast height (dbh) and greater, unless they are a safety hazard.
- Retain a minimum of 40 percent basal area.
- Retain all snags over 15 inches dbh, unless they are a safety hazard.
- Retain all hardwoods.
- Retain scattered trees leaning 20 degrees or more from vertical and trees with broken tops for wildlife value.
- Within PACs, hand thin conifers less than 6 inches dbh or prune to reduce ladder fuels only to the degree needed to meet fuels objectives.

While multiple objectives for restoration would be addressed in most stands, the primary objectives of the proposed treatments are as follows.

Table 1 Stand Treatments

Stand	Total acres	No Treatment	Saw Log Removal	Biomass Removal 4–10 inches dbh	Hand Thin Lop and Scatter	Hand Thin, Pile and burn	Under Burn	Jackpot Burn	Grapple Piling and Burn	Borate Compound
05*	256	48	125	125	83		170			125
06	114	24	52	52			90			52
29	8						8			
49	229	2					227			
50A	49	8	26	26			28			26
51	118				118		118			
52	183	74	104	104	5		5		104	104
52A	26		26	26						26
53	18	18								
54	50	35							15	
55	52		52	52					52	52
56	90	90								
57	184		184	184				184		184
58	129		127	127			95		6	127
58A	52		52	52			24			52
59	42		34	34			42			34
60	200		200	200			200			200
60A*	56		56	56			56			56
61A*	27		27	27			27			27
62	111		111	111						111
63	244	244								
63B	49						49			
64	195	195								
65	3					3				
70	183	183								
71	54	54								
72	24	24								
73	265	265								
74	15	15								
75	56	56								
76	43	43								
77	61	61								
78	102	102								
79	21		21	21						21
80	19		19	19						19
81	67		67	67						67
82	101								101	
83	88		88	88					88	88
84	106		106	106			106			106
84A	2		2	2			2			
85	94		94	94			78			94
86	15		15	15			10			15
87	38	38								
88	15								15	
89	151	106	45	45					45	45
90	272	272								
90A	1		1	1						1
91	55		55	55			55			55
92	137	23	114	114			114			114
93	116	17	99	99			79			99
Totals	4,586	1,997	1,902	1,902	206	3	1,583	184	426	1,902

* Portions of stands 05, 60A and 61A may be Skylined at operator's discretion due to rockiness of areas.

Table 2 Plantation Treatments

Unit	Acres	No Treatment	Biomass	Saw Log Removal	Shred	Hand Thin, lop/scatter	Under burn	Hand thin, pile/burn	Jackpot burn	Prune	Borate Compound
C1	4		4	4		4					4
C2	3		3			3					
C3	3				3						
C4	3			3	3						3
C5	4			4	4						4
C6	4				4						
C7	4			4	4						4
C8	4			4	4						4
C9	7				7						
C10	4			4	4						4
C11	9			9	9						9
C12	6		6	6		6					6
C13	16				16						
C14	4				4						
C15	7					7					
C18	13					9		4		13	
C19	3		3	3		3					3
C21	4				4						
C23	4		4	4		4					4
C24	5			5	5						5
C25	4				4						
C27	3			3							3
C28	7					7					
C29	6	6									
C30	1		1	1					1		1
C31	4							4			
C33	12		12	12		12					12
C34	12			12	12						12
C43	2		2	2		2					2
G1	4	4									
G2	3			3			3				3
G3	2		2	2		2	2				2
G4	3		3			2		1		3	
G5	6		6			6					
G6	21				21						
G18	4	4									
G21	5		5				5	5		5	
G43	4		4			4					
G45	6							6		6	
G46	7		7	7		4		2		7	7
G47	10		10	10	10		10			10	10
G53	4		4			2		2		4	
S2	8		8	8				8		8	8
S4	5		5	5				5		5	5
S5	5		5	5				5			5
S33	2			2		1		1		2	2
S34	15			15			6	15		6	15
S35	6					4		2		6	
S36	3					1		2		3	
Totals	285	14	94	137	118	83	26	58	5	78	137

1. Forest Health and Restoration

Pine and Oak Enhancement

Stands 05, 06, 58, 59, 60, 86, 92, 93

Treatment for pine and oak enhancement is proposed in areas where pine and oak historically comprised a larger proportion of the stands. Pine and oak in these stands are currently less abundant due to fire suppression and past harvest activities that removed much of the pine, resulting in increased densities of shade tolerant tree species, such as incense cedar, white fir, and red fir. These stands are predominantly on southern aspects in the lower elevations of the project area.

The proposed treatment is variable density thinning. It would include the removal of sawlog and biomass size material around existing oaks and pines to provide growing space (½ to 1 crown width), and the creation of small openings up to ½ acre adjacent to existing seed bearing pines to promote natural regeneration.

In the portions of these stands where oak or pine are absent (where no oak and pine seed source exists) the proposed action would be to retain clumps of incense cedar and fir, with tighter spacing (overlapping to ½ crown width), to provide spatial and vertical heterogeneity. This would create a clumpy distribution which more closely characterizes historic stand structure.

These stands also have pockets of annosum root disease present which would be treated and are described below under insects and disease treatments.

Insect and Disease Treatments

Stands: 52, 55, 57, 62, 79, 80, 81, 83, 84, 85, 89, 91

Plantations: C1, C3, C4, C5, C7, C19, C27, C28, G2, G3, G47, S2, S4, S5, S33, S34

These stands have elevated disease and/or insect presence and are either currently experiencing or are at risk of high tree mortality. Past management activities have contributed to the elevated levels of disease observed in these units. The following proposed treatments are designed to help restore the existing conditions to more natural background levels. The primary pathogen agents are dwarf mistletoe and annosum root disease. White pine blister rust, cytospora canker, fir engravers, and bark beetles are also present. The proposed treatments are designed to promote tree vigor and continued forest cover by reducing pathogen infection levels and increasing stand health, which would make the stands more resilient to future disturbance.

In stands with elevated infections of mistletoe, treatments are designed to: 1) reduce the infection levels of mistletoe, while retaining a sufficient quantity of diseased/defect trees to meet wildlife habitat needs. Both issues would be addressed by removing the most severely infected individuals (Hawksworth mistletoe ratings of 3 and greater (Hawksworth 1977)); 2) promote species diversity within stands to limit the spread of mistletoe. Dwarf mistletoes are species specific and non-host species can be an effective screen to limit the spread of this pathogen; and 3) retain healthy trees that have the potential to outgrow the mistletoe. In areas adjacent to plantations C4, C5, C7, C19, S4, and S34 (stands 52, 91, and 92), the proposed action is to remove all mistletoe infected overstory trees with a Hawksworth mistletoe rating of 3 and greater within 65 feet of the plantations if no physical barrier (i.e. non-host species) is present to prevent mistletoe seed dispersal into developing plantations. This includes 33 trees greater than 30 inches dbh¹. In or adjacent to 8 additional plantations, trees greater than 30 inches dbh would be girdled (less than 100 trees) if no physical barrier (i.e. non-host species) is present to prevent mistletoe seed dispersal. This would reduce impacts from dwarf mistletoe and promote tree health and long-term survival, while retaining wildlife features.

¹ Removal of trees greater than 30 inches dbh is allowed under SNFPA (USDA 2004), p 51, Standard and Guideline 9.

In stands with an elevated occurrence of annosum root disease infection centers (Stands 05, 06, 55, 57, 58, 59, 60, 84, 85, 86, 91, 92 and 93) non-host species (pines and incense cedars) would be favored for retention and the densities of true firs would be reduced to provide greater vigor and resiliency of the residual trees. In pockets of annosum root disease with seed bearing pines present, existing openings would be expanded by removing all red and white firs less than 30 inches dbh to one tree length beyond the edge of visible signs of the disease, not to exceed 1 acre (117 foot radius) to promote pine regeneration. In Stand 55, where annosum root disease is severe and resulting in high mortality of firs, remove all red and white firs, including those greater than 30 inches dbh². This treatment is designed to convert these areas of stand 55 to pine. The pine would provide a physical barrier to reduce the spread of annosum root disease through the root grafting of firs. The conversion to pine would ensure forest cover in the future.

All stands and plantations would have a registered borate compound applied to all freshly cut stumps 14 inches and greater in diameter to limit the spread of annosum root disease and to reduce the risk of new infection centers from developing.

Plantations

The project area contains 49 plantations, ranging in age from 17 to 44 years old; of these, 45 are proposed for treatment. Project objectives include reducing pathogen levels, increasing species diversity, and accelerating development of old forest characteristics. Treatments in most plantations include two or more of the following methods (see Table 2).

- **Shredding** (C3-C11, C13, C14, C21, C24, C25, C34, G6 and G47): Brush and small trees up to 12 inches dbh would be masticated to chips and pieces less than 3 feet in length. This material would be spread out left on site as mulch.
- **Hand Thinning** (C1, C2, C12, C15, C18, C19, C23, C28, C33, C43, G3, G4, G5, G21, G43, G45, G46, G53, S2, S4, S5 and S33-S36): Treatments would consist of hand felling and lopping and scattering or piling and burning of trees less than 12 inches dbh.
- **Biomass Removal** (C1, C2, C12, C19, C23, C30, C33, C43, G3, G4, G5, G21, G43, G46, G47, G53, S2, S4 and S5): Small, sub-merchantable trees between 4 and 10 inches dbh would be cut, skidded to a landing and chipped or removed.
- **Sawlog Removal** (C1, C3-C5, C7, C8, C10-C12, C19, C23, C24, C27, C30, C33, C34, C43, G2, G3, G46, G47, S2, S4, S5, S33 and S34): Remove merchantable trees greater than 10 inches dbh.
- **Pruning** (C18, G4, G21, G45, G46, G47, G53, S2, S4, S33, S34, S35, and S36): Prune branches on residual trees to reduce damage from prescribed fire.

2. Re-introduce Fire

- **Underburning:** (Stands 5, 6, 29, 49, 50A, 51, 52, 58, 58A, 59, 60, 60A, 61A, 63B, 84, 84A, 85, 86, 91, 92, and 93; Plantations G2, G3, G21, G47 and S34): Underburning is proposed in mixed conifer stands and stands that historically maintained a higher amount of oak and pine. Maintenance prescribed fire treatments would occur across the project area 5 to 41 years after initial prescribed fire treatments, based on forest type, natural fire regime and future fuel conditions. Target time period for maintenance prescribed fire to occur are 5 to 9 years in pine forest type, 6 to 15 years in Sierra mixed conifer forest type, and 15 to 41 years in red fir forest type.
- **Jackpot burning:** (Stand 57; Plantations C30-C31): Jackpot burning is the prescribed burning of heavy concentrations of down woody fuels, under conditions in which the fire cannot spread. This

² Removal of trees greater than 30 inches dbh is allowed under SNFPA (USDA 2004), p 51, Standard and Guideline 9.

burning is proposed to eliminate fuel concentrations, reduce the potential for extreme fire behavior, and provide open seed-beds for natural regeneration of pine.

- **Grapple piling and pile burning:** (Stands 52, 54, 55, 58, 82, 83, 88 and 89): Piling is proposed where underburning would be difficult to implement and within some higher elevation fir/pine stands where pockets of heavy dead and down fuels exist (greater than 30 tons/acre). Eliminating these fuel concentrations by piling and burning would reduce the potential for extreme fire behavior and provide open seed-beds for pine regeneration.
- **Hand piling and burning:** (Stand 65; Plantations C18, G4, G21, G45, G46, G53, S2, S4, S5, S33, S34, S35 and S36): Piling is proposed where material less than 10 inches in diameter would be piled and burned to reduce fuel loading.
- **Firelines:** Existing roads (15.5 miles), trails (3.4 miles) and streams (2.3 miles) would serve as firelines where possible and hand lines (6.9 miles) and dozer lines (2.7 miles) would be constructed where needed (see map package).

3. Aspen Restoration

Stands 06, 50A, 52A, 58A, 60A, 61A, 84A, 90A

The objective of this restoration treatment is to convert stands back to aspen. These stands contain aspen that are in decline due to the encroachment of conifers. The proposed treatment is to remove all encroaching conifers up to 40 inches dbh³, where the aspen root system is healthy and vigorous enough to respond to release and livestock (commercial and recreational) can be excluded. This diameter limit corresponds to trees that established post 1850, and was determined from regression analysis of increment cores from existing trees. Aspen regeneration would be protected from overbrowsing with fencing as needed, until aspen sprouts grow above livestock browse height. In the areas of these stands where the aspen root system is not vigorous and able to respond to release, but larger aspen are present, all conifers that established post 1850 would be removed to provide 10 foot crown spacing around the aspen to increase root system vigor. Regeneration response would be monitored and protected from livestock (commercial and recreational) browsing as needed to achieve regeneration objectives. Following conifer removal, prescribed fire may be used where suckering would be stimulated and where existing regeneration would not be damaged. The south portion of Stand 50A, which is within proposed WSR-Wild, would be excluded from thinning treatments. However, girdling of encroaching conifers within aspen stands is proposed. In areas of these stands where aspen are not present treatments would be that of the adjacent stand (stand 06 for 50A, 58 for 58A, 60 for 60A and 61A, 84 for 84A, and no treatment for 90A)

4. Meadow Restoration

The proposed meadow restoration treatments, which focus primarily on gully erosion and conifer encroachment, are described below.

Gully Erosion

Lily Lake (Stand 06)

The proposed treatment would fill a gully, located approximately 0.2 miles downstream of Lily Lake, bring the streambed back up to its original elevation and stabilize the existing headcut to prevent it from advancing towards Lily Lake. In addition, a rock base structure would be constructed at the downstream extent of the gully to tie the restored streambed elevation to the downstream streambed elevation. The treatment area (approximately 0.5 acres) would be fenced following project

³ Removal of trees greater than 30 inches dbh is allowed under SNFPA Standard and Guideline 9 (USDA 2004, p. 51).

implementation to allow vegetation to re-establish and the project area to stabilize⁴. The fence would be maintained for 5 years or until the site is stable, whichever is longer. Native willow stock and/or local seed sources would be planted/spread to promote revegetation of the site.

Round Meadow (Stand 50A)

The proposed treatment would fill two gullies in the meadow with soil to bring the streambeds back to their original elevation. This would allow the streams to re-access their floodplains and would raise the water table of the meadow, returning the meadow to a more natural wet condition. Some trees (all less than 30 inches dbh) along the gully banks would need to be removed to allow for equipment access. Treatment would begin at the upstream headcuts and would end at the confluence of the two gullies at the southern extent of Round Meadow. In order to tie the treated streambed elevation to that of the untreated streambed below Round Meadow, a rock base structure would be constructed. Once the gully is filled and shaped, rock grade stabilizers would be installed at the site to hold the fill in place while vegetation establishes. These buried rocks would prevent any incision from moving upstream. The treatment area (approximately 11 acres) would be fenced following project implementation to allow vegetation to re-establish and the project area to stabilize. The fence would be maintained for 5 years or until the site is stable, whichever is longer. Native willow stock and/or local seed sources would be planted/spread to promote revegetation of the site.

Crab Meadow (Stand 61A)

Numerous small gullies occur in Crab Meadow. These gullies are likely a result of concentrated road drainage from Forest Service (FS) Road 04N47 and other previous land management activities. FS Road 04N47 is proposed for reconstruction to address runoff concerns (see road reconstruction below). In addition to the road treatments, restoration would involve filling the gullies to stabilize the meadow and prevent further loss of topsoil. It would also involve installing rock base structures and rock grade stabilizers, as described above for Round Meadow. Some trees adjacent to the meadow would be removed to allow for equipment access from FS Road 04N47. An organic soil amendment, such as Biosol, would be used to improve soil fertility. The treatment area (approximately 3 acres) would be fenced following project implementation to allow vegetation to re-establish and the project area to stabilize. The fence would be maintained for 5 years or until the site is stable, whichever is longer. Additionally, the fens in the meadow just east of Crab Meadow would be fenced to protect these special aquatic features.

Conifer Encroachment

Stands 50A, 52A, 60A, 61A, 65

The proposed treatment is to remove all conifers that established post 1850 (determined from regression analysis to be trees 40 inches dbh and under⁵) in meadows to re-establish/maintain the open nature of these features.

5. Roads, Trails and Recreation

Roads

Proposed road improvements would include the physical actions and changes to the National Forest Transportation System (NFTS) described below.

⁴ Restoration sites are considered "stabilized" when there is no active erosion and less than 10% bare ground. If these goals are not reached within five years, a range conservationist and hydrologist will reassess the recovery potential at that site to determine how stabilization can be achieved.

⁵ Removal of trees greater than 30 inches dbh is allowed under SNFPA Standard and Guideline 9 (USDA 2004, p. 51).

Physical Actions

The physical actions, shown in Table 3 and described below, involve moving earth and removing vegetation to change the physical condition and drivability of the roads.

Table 3 Physical Actions

Physical Actions	Road Classification				Total
	County	NFSR	Permit	UNR	
Decommission		0.36		0.77	1.13
Maintain	1.60	14.12			15.72
Reconstruction		11.51	4.39	0.24	16.14
Re-open/Close		3.49			3.49
Temporary				2.32	2.32
Total	1.60	29.48	4.39	3.33	38.80

NFSR=National Forest System Road; UNR=Unauthorized Route

Decommission

The proposed action would decommission the following NFTS roads or a portion of the roads (see Table 3 and Table 5, and Transportation Map in map package) and 4 unauthorized routes (0.77 miles). Additionally implementation of 2 roads (0.61 miles) decommissioned under the Summit Roads EA (2001) would occur.

- FS Road 04N25Y (0.32 miles), a Maintenance Level 1 road that enters the Waterhouse Inventoried Roadless Area.
- A segment at the end of FS Road 04N47D (0.04 miles) to move the road away from a stream and reduce sediment flow into the stream.

Reconstruction

Road reconstruction, including outsloping of the road, is proposed for FS Road 04N47, from FS Road 04N26 to Gianelli Trailhead, in order to reduce concentrated runoff. FS Road 04N47 is an insloped road where interrupted subsurface flow and road runoff concentrate in the inside ditches and then flows through culverts under the road. This concentration of runoff at the culvert outlets has led to erosion. This is particularly evident in Crab Meadow and the surrounding areas.

Road reconstruction and widening of the curve on FS Road 04N25A, the entrance to Kerrick Corral Horse Camp, is proposed. The curve going into the horse camp needs to be widened to accommodate horse trailers. The narrow curve has resulted in the creation of an unauthorized route adjacent to a tributary of Bell Creek. This unauthorized route is causing damage to the riparian area. Widening the curve on 04N25A would allow for decommissioning the unauthorized route.

Reconstruction of existing route FS Road 04N26B1 to Maintenance Level 2 is proposed. The road would continue to be used as a turnaround with a trailhead established at the end of the road.

Temporary Roads

The proposed action would include 2.32 miles of temporary road construction (Table 4). All, except two segments (0.24 miles) needed for meadow restoration access, are on existing road beds that would be decommissioned after use.

Table 4 Temporary Roads

Temporary Road	Length (miles)		
	Exist	New	totals
18E216	0.64		0.64
04N06YA1	0.55		0.55
04N242	0.26		0.26
41813A	0.10		0.10
41835D	0.18		0.18
41919E	0.04		0.04
41920B	0.06		0.06
41920D	0.18		0.18
DEC_04N241	0.07		0.07
T41835E		0.15	0.15
T41835F		0.09	0.09
totals	2.08	0.24	2.32

Changes to the National Forest Transportation System

Motor vehicle traffic is allowed only on authorized routes as shown open to public travel on the Motor Vehicle Use Map. In the Gooseberry area that includes NFTS and county roads. All other routes are considered “unauthorized” and not open to public motorized use. The proposed actions described below result in the changes to the NFTS shown in Table 5, and may affect whether public motor vehicle traffic is allowed on a certain road.

- FS Road 04N26B1 (0.24 miles) would be added to the NFTS. This is an existing road that is in use. It provides a turnaround below the Pine Valley Horse Camp and a trailhead would be established at the end of this road.
- A segment of FS Road 04N26C (0.32 miles) would change from Maintenance Level 2 to Maintenance Level 1. This section of the road is currently not accessible to standard highway vehicles and is on a steep grade with the potential for erosion.
- FS Road 04N25Y (0.32 miles) would be decommissioned.
- A segment of 04N47D (0.04) would be decommissioned.

Table 5 Changes to the National Forest Transportation System

ROUTE	MILES	PROPOSED PHYSICAL ACTION	EXISTING NFTS				PROPOSED NFTS			
			SYSTEM	MAINTENANCE LEVEL	VEH CLASS	SEASON OF USE	SYSTEM	MAINTENANCE LEVEL	VEH CLASS	SEASON OF USE
04N25Y	0.32	DECOM	NFSR	1			NOT NEEDED	DECOM		
04N26B1	0.24	RECONSTRUCT	NOT NEEDED				NFSR	2	HLO	4/15-12/15
04N26C	0.32	REOPEN/CLOSE	NFSR	2	HLO	4/15-12/15	NFSR	1		
04N47D	0.04	DECOM	NFSR	2	HLO	4/15-12/15	NOT NEEDED	DECOM		

NFTS = National Forest Transportation System; VEH CLASS = Vehicle Class; NFSR = National Forest System Road; HLO = Highway Legal Vehicles only

Trails

The proposed action would include the following trail improvements (see map package):

- Obliterate an unauthorized, user created, vehicle route that accesses Lily Lake from 04N25 and attracts motorized use on non-motorized trail 18E216.
- Replace existing gate on non-motorized trail 18E216 with horse gate at the intersection with 04N02Y.

- Obliterate 8 non-system, unauthorized non-motorized routes (2.4 miles) to reduce impact to resources.
- Reroute a section of non-motorized trail 18E85 around a meadow utilizing existing permit trails and restore the bypassed portion of the trail through the meadow.

Recreation

The proposed action would define the campground and site boundaries for Crabtree Trailhead and Campground, Kerrick Corral Horse Camp and Pine Valley Horse Camp to limit uncontrolled expansion of the campgrounds and reduce impacts to the adjacent natural area. Recreation site vegetation treatments would include sanitation thinning to reduce competition and remove declining trees in and around developed recreation sites, maintaining the healthiest trees and promoting regeneration of trees to provide for long-term canopy cover and screening between sites.

6. Noxious Weed Eradication

The proposed treatment is to remove small infestations of ox-eye daisy in the Clavey and South Fork Stanislaus watersheds to prevent these infestations from continuing to spread and move downstream. To protect the riparian vegetation along these rivers, ox-eye daisy would be removed through hand pulling, digging and mulching. Proposed treatments in the South Fork Stanislaus watershed are located along: Gooseberry Creek; FS Road 04N34 (from the project boundary east to FS Road 04N37); permit road 41918A; and, the Boulder Canyon ski runs at Dodge Ridge. Proposed treatments in the Clavey watershed are located along: FS Road 04N26, from Aspen Pack Station east to FS Road 04N241; the adjacent meadow and stream south of FS Road 04N26; and, permit road 41825D.

Alternative 2 (No Action)

Under Alternative 2 (No Action), current management plans would continue to guide management of the project area. No thinning; re-introduction of fire; aspen restoration; meadow restoration; improvements to roads, trails and recreation sites; or noxious weed removal would be implemented to accomplish project goals.

Alternative 3 (Non-Commercial Funding)

This alternative addresses Judge England's November 4, 2009 Order to include a non-commercial funding alternative at the project level for fuel reduction projects within National Forests covered under the 2004 Sierra Nevada Forest Plan Amendment. A non-commercial funding alternative is an alternative where the sole purpose is to achieve the fuels reduction element of the purpose and need and where all the proposed treatments are solely directed at reducing fuels. The non-commercial funding alternative has no additional tree thinning beyond that needed to meet the fuel reduction purpose and need.

1. Forest Health and Restoration

Stands would be the same as Alternative 1 (Tables 1 and 2), but treatments would remove only material necessary to meet fuels objectives. This would result in a maximum limit of 12 inches dbh; with an incidental amount of trees larger than 12 inches removed to create landings, skid roads or to meet other operational needs. Where spacing of residual trees does not allow access for equipment, treatments would be conducted by hand, with all material removed. The 12 inch diameter limit eliminates the borate compound application, as the borate compound was only proposed for application to stumps greater than 14 inches in diameter.

2. Re-introduce Fire

Treatments would be the same as Alternative 1.

3. Aspen Restoration

Aspen Restoration would not occur. Thinning treatments would occur in these stands to remove ladder fuels. Trees less than 12 inch diameter dbh would be removed, only to the degree needed to meet fuels objectives.

4. Meadow Restoration

The treatments would be the same as Alternative 1, with the exception that encroaching conifers would not be removed.

5. Roads, Trails, and Recreation

Treatments would be the same as Alternative 1.

6. Noxious Weed Eradication

Treatments would be the same as Alternative 1.

2.2 DESIGN ELEMENTS COMMON TO ALL ACTION ALTERNATIVES

The interdisciplinary team identified the following design elements that would apply with implementation of either action alternative. They are designed to minimize the environmental effects of the actions proposed under Alternative 1 (Proposed Action) or Alternative 3 (Non-Commercial Funding). They are organized according to the resource area that primarily benefits from the measure.

Air Quality

- Conduct prescribed burning in accordance with Title 17, Smoke Management guidelines for Agricultural and Prescribed Burning as required by the California Air Resources Board.
- Prescribed fire shall be conducted so that smoke emissions are the lowest achievable.
- Apply Best Available Control Measures to ensure emission reductions:
 - Reduce smoke pollutants by:
 - Limiting the mass of material burned;
 - Burning under moist fuel conditions when broadcast burning;
 - Shorten the smoldering combustion period.
 - Dilute of pollutant concentrations over time by:
 - Reducing the rate of release of emissions per unit area;
 - Burning during optimum meteorological conditions.

Aquatics

- All natural water bodies used for drafting water during project activities must be reviewed by the District hydrologist or Forest aquatic biologist prior to use to prevent dewatering of aquatic habitat.
- During water drafting for project activities, use a screening device to reduce pump intake velocity to minimize removal of aquatic organisms. A drafting box that is two feet on each side covered with ¼ inch screening is preferred.
- Adjacent to perennial and intermittent streams, avoid direct ignition of prescribed fire within 25 feet of obligate riparian vegetation which includes willows, alders, aspen, and wet-associated sedges and rushes. Prescribed fire may back into riparian vegetation.

Botany

- Flag and avoid any occurrences of sensitive plants found before or during implementation. None are known to exist at this time.
- If the moss in Round Meadow is confirmed to be *Bruchia bolanderi*, move capsules and/or vegetative portions (gametophyte) to similar habitat away from the proposed disturbance.

Cultural Resources

- Flag and avoid all archaeological sites. If flagging is observed, but location is unclear, stop and consult the District Archaeologist.

Mechanical Treatments

- Do not allow equipment within identified site boundaries.
- Notify the District Archaeologist immediately if any heritage properties are located or site trespass occurs during implementation.
- Trees may be removed from within site boundaries, with prior approval from the Forest Archeologist. Tree removal would occur by equipment reaching into the site, without disturbance to the site.

Burn Treatments

- Do not build firelines through any cultural resource site unless reviewed by the Forest Archaeologist prior to implementation of the project.
- Protect historic sites with wood features using one or a combination of the following: hand-constructed firelines, foam wetting agents, or fire shelter fabric. Exclude areas from burning where sites cannot be protected.
- Remove cut vegetation from the sites to reduce flare-up near the site.

Hydrology

Management requirements designed to protect water quality and watershed condition are derived from Water Quality Management for Forest System Lands in California, Best Management Practices (BMPs) (USDA 2000) and Riparian Conservation Objectives (RCOs) (USDA 2004). Riparian resources within Riparian Conservation Areas (RCAs) would be protected through compliance with the RCOs in the Forest Plan.

Beneficial uses of water are protected by BMPs, which prevent or minimize the threat of discharge of pollutants of concern. BMPs applicable to this project are project-wide unless specific locations are identified below. BMPs relating to project implementation are described below; BMPs relating to planning processes are inferred as a result of preparation of this document. Applicable BMPs are listed below each management requirement. Management Requirements and BMPs have been used on similar projects in the past and have been found to be effective in protecting water quality and watershed condition.

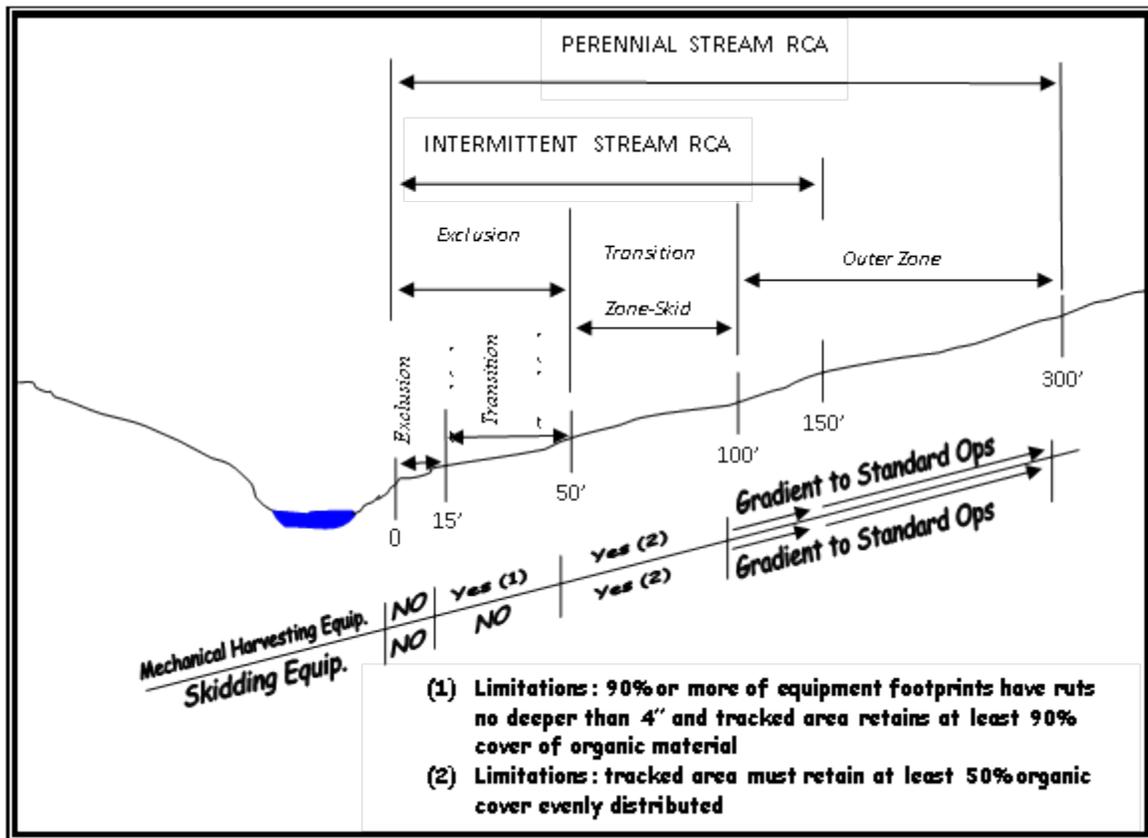
Project planners and administrators (i.e. layout, Sale Administrator, Contracting Officer's Representative, or Contract Inspector) are responsible for consulting with a hydrologist and/or soil scientist prior to or during project implementation for adjusting or interpreting application of watershed management requirements below.

1. Mechanized Equipment Operations within RCAs/Critical Aquatic Refuge

Operations in Perennial and Intermittent Stream RCAs

The RCA is divided into three zones to provide a wide, graduated buffer so that riparian conservation objectives and management objectives can be achieved. The zone nearest the stream is an exclusion zone that prohibits mechanized equipment. The next zone is a transition zone that allows light use. The third zone is an outer zone that allows additional use as distances increase from the stream. See Figure 1 for a diagram of the three zones. The objective of the exclusion and transition zones is to retain a high percentage of ground cover and prevent detrimental soil compaction and displacement. The intent of the outer zone is to allow activity to increase from light use in the transition zone to standard operations beyond the RCA.

Figure 1 Equipment Operations in Perennial and Intermittent Stream RCAs



Exclusion Zone

The exclusion zone starts at:

1. The edge of the active channel where slopes rise uniformly from the stream or at the outer edge of the following features, whichever is furthest from the stream.
2. The first slope-break adjacent to the stream (e.g. streambank, outer gorge)
3. Flat or nearly flat ground adjacent to the channel (e.g. floodplain or terrace)
4. Wetland riparian shrub and/or tree communities associated with any of the above.

For example, if the edge of the active channel is 2 feet from the water's edge, the first slope break is 5 feet from the water's edge, the floodplain is 15 feet from the water's edge, and the obligate riparian vegetation extends 25 feet from the water's edge, then the exclusion zone would start at the edge of the obligate riparian vegetation, since it is furthest from the stream. In Figure 1 above, this start of the exclusion zone is labeled as 0 feet.

- Skidding equipment (e.g. rubber-tired skidders and track-laying tractors) may not come within approximately 50 feet of the start of the exclusion zone, and mechanical harvesting and shredding equipment (e.g. feller-bunchers and masticators) may not come within 15 feet from the start of the exclusion zone. In the example described above, where the obligate riparian vegetation extends 25 feet from the water's edge, mechanical harvesting equipment would remain 40 feet from the water's edge (25 feet to the start of exclusion zone + 15 foot exclusion zone) and skidding equipment would remain 75 feet from the water's edge (25 feet to the start of exclusion zone + 50 foot exclusion zone).
- Operation created debris would be removed from stream channels. No damage to streambanks from equipment would be allowed. All vegetation that is maintaining streambank stability would be retained. All wetland riparian vegetation would be retained.

Transition Zone

- The transition zone for skidding equipment is 50 feet wide and starts at the end of the exclusion zone (labeled as 50 to 100 feet in Figure 1).
- Where skidding equipment is operating, retain a minimum of 50% evenly distributed ground cover in the tracked area. Existing skid trails should be used except where unacceptable impact would result. Do not create new skid trails within 100 feet of a stream. The number of perennial and intermittent stream crossings should not exceed an average of 2 per mile.
- The transition zone for mechanized harvesting and shredding equipment is 85 feet wide and starts at the end of the exclusion zone (labeled as 15 to 100 feet in Figure 1).
- For the first 35 feet of the transition zone for mechanized harvesting equipment (labeled as 15 to 50 feet in Figure 1), operations may only be allowed when continuous ground cover can be retained in 90% of the tracked area, and where 90% of the total tracked area is rutted less than 4 inches deep. For the last 50 feet of the transition zone for mechanized harvesting equipment (labeled as 50 to 100 feet in Figure 2), retain a minimum of 50% evenly distributed ground cover in the tracked area.

Operations in Ephemeral Stream RCAs

Ephemeral streams have running water only during or shortly after rainfall and/or snowmelt, and show evidence of annual channel scour.

Exclusion Zone

- The exclusion zone begins at the edge of the active channel where slopes rise uniformly or at the edge of the streambank, whichever is furthest from the stream.
- The exclusion zone for skidding equipment near ephemeral streams is 25 feet from the start of the exclusion zone. The exclusion zone for mechanical harvesters and shredding equipment is 15 feet from the start of the exclusion zone.

Transition Zone

- The transition zone for skidding equipment is 25 feet wide and starts at the end of the exclusion zone.

- The transition zone for mechanical harvesting equipment is 35 feet wide and starts at the end of the exclusion zone
- Within the transition zone for both skidding and mechanical harvesting equipment, retain a minimum of 50% evenly distributed soil cover in project-created tire or tracked vehicle footprints. The number of ephemeral stream crossings should not exceed an average of 3 per mile.

Operations Adjacent to Special Aquatic Features such as lakes, wet meadows, bogs, fens, wetlands, vernal pools, and springs

The exclusion zone and transition zone widths and operating requirements are the same for special features as for perennial streams.

Exclusion Zone

- The exclusion zone begins at the outer edge of wetland trees, shrubs or herbaceous plants in wet meadows, and springs, or the high water line of vernal pools, or the top of the first slope-break immediately adjacent to the special aquatic feature if further than the wetland riparian vegetation or high water line.

Applicable BMPs

The preceding management requirements for mechanical operations in RCAs implement the following applicable Best Management Practices (BMPs):

- 1-8 – Streamside Zone Designation
- 1-10 – Tractor Skidding Design
- 1-17 – Erosion Control on Skid Trails
- 1-18 – Meadow Protection During Timber Harvesting
- 1-19 – Streamcourse and Aquatic Protection
- 5-3 – Tractor Operation Limitation in Wetlands and Meadows
- 5-6 – Soil Moisture Limitations for Mechanical Equipment Operations
- 7-3 – Protection of Wetlands

Special Conditions

- Forest Road 04N241: Haul across the intermittent tributary to Bell Creek should be limited to when the creek bed is dry.

2. Log Landings

Re-use log landings to the extent feasible.

New landings shall not be constructed within 100 feet of perennial or intermittent streams and 50 feet of ephemeral streams. Subsoil all landings when harvest/biomass operations are complete.

Applicable BMPs

- 1-12 – Log Landing Location
- 1-16 – Log Landing Erosion

3. Roads

Service and refuel equipment outside of RCAs.

Road watering for dust abatement and road surface protection shall be conducted using existing water source locations. Water use shall not adversely deplete pool volume. Screens shall be installed on water intake lines to prevent entrainment of fish and amphibians. Maintain roads during the life of the project and control road use during wet periods to prevent or minimize entrainment of sediment into stream courses. Roads that are decommissioned should be effectively drained by measures such as re-contouring, outsloping, waterbars, or other drainage features. In addition, crossings should be removed, slopes stabilized and returned to natural topography where feasible, surfaces subsoiled to improve infiltration, and roads effectively blocked.

Applicable BMPs

- 2-1 – Guidelines for the Location and Design of Roads
- 2-7 – Control of Road Drainage
- 2-12 – Servicing and Refueling of Equipment
- 2-21 – Water Source Development Consistent with Water Quality Protection
- 2-22 – Maintenance of Roads
- 2-23 – Road Surface Treatment to Prevent Loss of Materials
- 2-24 – Traffic Control During Wet Periods
- 2-26 – Obliteration or Decommissioning of Roads
- 7-3 – Protection of Wetlands

Special Conditions

- 04N47D: When using tributary to Bell Creek as a water source, keep water trucks a minimum of 10 feet from the streambank to protect bank stability. Following use as a water source, the end of the road should be decommissioned and camouflaged to keep vehicles 100 feet away from the stream.
- 41823A: Protect leach field and metal pipe when decommissioning road.

4. Trails

When decommissioning trails, lop and scatter slash to camouflage trails to reduce the likelihood of trails reopening.

5. Slope Limitations

See Soils design elements.

6. Prescribed Burning

- Avoid damage to riparian vegetation; such as willows, alders, and cottonwoods.
- Retain 75% ground cover within 100 feet of perennial streams and 50 feet of intermittent streams. Ground cover is defined as a minimum of one inch of organic litter, slash, duff, or loose rock fragments, as well as living vegetation less than five feet tall. Fire is allowed to back into the riparian area as long as ground cover is maintained. Avoid direct ignition within ephemeral channels. New dozer lines shall not be constructed within 100 feet of perennial and intermittent streams and 50 feet of ephemeral streams. Constructed fire lines shall be restored upon completion of prescribed burning and/or prior to each winter when fire lines are exposed to erosion. Restoration shall consist of water barring hand and dozer lines, re-contouring of benched trails, and subsoiling of detrimentally compacted dozer lines.

Applicable BMP

6-3 – Protection of Water Quality from Prescribed Burning Effects

Special Conditions

- Round Meadow, Crab Meadow, and headcut downstream of Lily Lake: Prescribed fire in these restoration sites should be coordinated with a hydrologist prior to ignition to ensure that revegetation and fencing associated with restoration projects are protected.

7. Burn Piles

Burn piles shall be placed a minimum of 50 feet away from perennial and intermittent streams and 25 feet from ephemeral streams unless otherwise approved by a hydrologist and/or soil scientist. They shall also be located outside of areas that may receive road runoff.

Applicable BMP

6-3 – Protection of Water Quality from Prescribed Burning Effects

8. Borate Compound

Do not apply borate compound within 10 feet of surface water or when rain is falling or forecast within 24 hours. Follow all State and Federal rules and regulations for pesticide applications.

Applicable BMPs

5-7 – Pesticide Use Planning Process

5-8 – Pesticide Application According to Label Directions and Applicable Legal Requirements

Noxious Weeds

- All tracked vehicles, earthmoving equipment, and vehicles that leave roads and landings must be free of soil, mud (wet or dried), seeds, vegetative matter or other debris that could contain seeds in order to prevent new infestations of noxious weeds in the project area. Dust or very light dirt which would not contain weed seed is not a concern. Introduction of cheatgrass is of special concern in Stands 05 and 06.
- Hand treat (pull and dig) weeds at the water source at Sheering Creek at 04N26 (which is outside of the project boundary) before seed set for the duration of the use of that source.

Range

- Protect existing range fences and improvements during implementation. Any damage must be repaired or replaced to the condition prior to operations or better.
- Coordinate with allotment permittee during project implementation to reduce conflict and impacts on grazing activities.
- Maintain range gates in current status (if gates are closed, they should remain closed, if open, they should remain open) as to not interrupt grazing rotations and management operations.

Recreation

National Forest System Trails and Permitted Trails

- Protect integrity of system trails (18E85, 18E216 and 19E21) and permitted trails (041825D, 04N26G, 04N26H, 41825 and 04N241) to its condition or better prior to initiation of management operations.

- Remove slash and debris after operations to provide trail free from obstructions which would prevent normal visitor use and travel including equestrian, pedestrian, and/or biking.
- Remove any unattached overhanging limbs within 4 foot of trail edge created as a result of falling and/or or burning activities.
- Construct or replace waterbars to prevent erosion on trails impacted from skidding activities.
- Use existing materials to establish a non-motorized, single track trail condition when decommissioning the temporary road that follows non-motorized trail 18E216.
- Lop and scatter slash along trail prism for a distance of at least 150 feet from any intersection with a road, trail, trailhead or campground along all trails not identified above.

Nordic and Mountain Bike Trails

Most Nordic and mountain bike trails follow existing Forest Service roads; however several traverse cross-country (Rock and Roll, Ridge, Sugar Pine, and Burnt Bowl Nordic Trails) and should be retained after logging operations.

- Remove slash and boles generated by management activities from the trail prism on Rock and Roll and Ridge Trails.
- Lop and scatter logging slash to a level below 2 feet in height on Nordic trails.
- Do not scatter slash on mountain bike trails.
- Re-post all blue diamond markers if marker trees are removed, and provide additional trail markers to ensure adequate trail delineation where tree density is reduced and trails become less defined.

Trailheads and Campgrounds

- Protect all developed sites during implementation of the management activities.
- Repair or replace any damaged site amenity to its condition prior to initiation of management operations or better. Amenities include: water systems (tanks, lines, spigots, troughs, etc.); roads, curbs and gutters; trash cans; tables; fire rings/grills; information boards; signs; toilets; lantern poles; hitching rails; etc.
- Management activities in and adjacent to developed sites (Stands 52, 52A, 55, 58, and 59) should occur after Labor Day. Activities should not occur on weekends from opening weekend of deer hunting season (rifle) through snow fall or end of deer hunting season (rifle), unless otherwise specified by Recreation staff based on use observations and the availability of other similar sites.
- Do not underburn through developed sites.
- Limit heavy equipment to existing travel ways to minimize site impacts within developed sites.
- Flush cut all stumps, maximum stump height of 2 inches, within campground and trailhead boundaries.

Permitted Sites

- Stands 82 and 89: protect all structures and investments related to ski area operations at Dodge Ridge (e.g. lift lines, lift towers, lift buildings, etc.). Compensate permit holder for cost of repair/replacement for any damage related to management activities incurred to any component of the ski area.
- Stands 52, 55, 84, and 89: protect water system components. Any damaged component must be replaced or repaired to the condition prior to initiation of management operation or better; or permit holder must be compensated for cost of repair/replacement.

- Coordinate with Dodge Ridge for all treatment activities to avoid damage to infrastructure and interference with summer maintenance work.
- Coordinate with Aspen Pack Station to avoid damage to infrastructure and interference with summer maintenance work.
- Management activities in and adjacent to Aspen Pack Station should occur after Labor Day. Coordinated activities with the designated representative of the authorized permit.
- Management activities in Dodge Ridge should occur before November 1 and after April 30 (close of ski area). Coordinate activities with the designated representative of the authorized permit.

Near Natural Management Area

- Stand 49: limit vehicle access for fire management activities to existing roads. Prohibit ATV use in this area for implementation of prescribed burning.

Limited Operating Periods

- No hauling on 04N26 and 04N47 between Memorial Day and Labor Day, and opening weekend of deer hunting season (rifle).
- No hauling on 04N35 west of intersection with 04N06Y.
- No operations in units 52, 52A, 55, 57, 58, 58A, 59, 60, 60A, 61A, and 62 from 7 pm to 8 am.
- Cable logging of unit 61A needs to occur Monday through Friday, after October 1 through November 15.

Soils

The R-5 Soil Quality Analysis Standards (USDA 2010c, USDA 2012b), and Forest Plan Direction (USDA 2010a) provide standards that guide soil management. The following Soil Management Practices (SMPs) would be implemented at the project level to maintain long-term soil productivity.

SMP 1.0: Maintain organic soil cover for erosion control and nutrient cycling

- Maintain a well distributed soil cover: 1) 50% cover on slopes < 35%; 2) 60% cover on slopes >35%; and 3) 70% cover in riparian areas, RCAs. Soil cover consists of litter, fine woody debris, and downed logs. Retain downed logs in the range of 3 to 6 tons per acre (retain the largest log, minimum 16 inches diameter) outside of defense zones and fuelbreaks. Large rotten logs are preferred. Maintain soil cover for erosion control and hydrologic function.
 1. Prescribed fire - Note that needle cast is expected to contribute to erosion control ground cover.
 2. Slopes immediately below rock outcrop areas are naturally prone to high runoff. Buffer slopes below lava caps and rock outcrops by maintaining 75% ground cover to prevent erosion. A minimum buffer length would be 100 feet.
 3. Hand treatments or shredding is the preferred treatment in open low-site areas where soils would be sensitive to removal of surface organics and topsoil (Stand 93, 14 acres on west side of ridge top).

SMP 2.0: Ground based equipment would operate on dry soils of high soil strength or bearing capacity

- This is a preventive practice to limit class 3 and some class 2 soil disturbance (USDA 2009) to small dispersed areas (less than 15% of the treatment area). The practice is primarily designed to avoid excessive soil compaction or rutting during tractor harvest, tractor piling, or shredding operations. Fine soil textures, moist soil conditions, or presence of “legacy” compaction can be indicators of a high compaction hazard.

1. Ground based equipment would operate on relatively dry soils of high soil strength or bearing capacity. The upland soils in the Gooseberry project area typically have a low compaction hazard (few limitations within the Normal Operating Season) due to coarse textures and high rock content.
2. The aspen regeneration units (50A, 52A, 58A, 60A, 61, 84A, 90A) are likely to be wet longer and may require adjustments to avoid poor trafficability conditions. Consult with the soil scientist before entering stands with equipment.
3. Test for earlier season soil readiness on units S2, S4 and S5 and spot check other units as necessary (for example north facing slopes and RCAs that may stay wet for some time).

SMP 3.0: Subsoil Detrimentially Compacted Areas

- This is a corrective treatment that limits the cumulative amount of ground compacted. Ground-based operations would be mitigated by a combination of managing the timing of operations (operating on high strength soils) and subsoiling of compacted areas. Identify soils with low and high compaction hazard and adjust the amount of subsoiling accordingly. Coordinate with soil scientist during project implementation to determine final subsoiling needs.
 1. Tractor units with low compaction hazard and low existing compaction (applies to all Gooseberry units): Landings should be subsoiled and the first 100 yards of skid trail from landings, in most cases.
 2. Tractor units, inappropriate to subsoil: These are units dominated by thin or rocky soils, or thinned plantations with a high frequency of stumps in skid trails. Units 05 and 06 in the Gooseberry project are too rocky to subsoil.
 3. A soil scientist experienced with subsoiling may advise the Sale Administrator on soil-site conditions (i.e. rock content, slope gradient, moisture conditions, depth to restricting layer, erosion hazard). This is particularly important on trail gradients approaching 15% to 20%.
 4. Subsoiling Provision: Ensure that contract specifications or operating plan includes the required depth of subsoiling; the maximum depth of furrowing; a requirement for backblading when the depth of furrowing is exceeded; winged ripper tool design specifications (example of approved equipment). The original Johannson tool design is used as an example of approved equipment. Acres or miles of subsoiling would be provided.

SMP 4.0: Determination of Surface Disturbance Hazard and Slope Limitations for Ground-based Equipment

- This is a preventive practice to limit class 3 and some class 2 soil disturbance (USDA, 2009) to small dispersed areas (less than 15% of the treatment area). The practice is compatible with BMPs 1.9 and 1.10 and is primarily designed to avoid excessive soil displacement on steeper slopes or thinner soils during tractor harvest, tractor piling, or shredding operations. The practice is also applied to fuelbreak areas and prescribed fire dozer line construction.
- Less productive treatment units with thin or rocky soils (parts of units 05, 06 and 62) are considered higher risk and may require greater protection. Backblading of skid trails may be required where practical, in addition to standard erosion control.
- Slope limitations for tractors are required to limit surface gouging and displacement: 1) 25% slope for tractor piling; 2) 35% slope for common tractor skidding; 3) 35% slope for dozer fireline construction; 4) 45% slope for tracked shredding equipment. Soil displacement can occur on flatter ground on sensitive soils, on extremely dry soils, or where adverse skidding is necessary.
 - The loose volcanic soils in the Gooseberry project area are prone to displacement therefore the application of soil practice 4.0 is an important mitigation measure particularly on the steep portions of units 83 and 84. Other units have smaller areas of steep tractor ground.
- Treatment units with steep tractor ground would use one of the following systems:

1. Keep skidders (rubber tired or fixed track) on slopes less than 35%. Short steep pitches (>35% and less than 100 feet) may be endlined or excluded from treatment.
2. A feller buncher can pack smaller trees off of steep pitches under favorable soil conditions. Coordinate with soil scientist on layout.
3. Aerial harvest or use hybrid system where topography is favorable and a significant portion of unit is steep (>35% slope).
4. Use flexible track (low ground disturbance) skidders where a significant portion of the unit is steep (35-45%), or where adverse skidding is necessary.

Vegetation

- Protect all healthy sugar pines during all operations. Timber removal would be conducted to promote this and other pine species.
- In mechanical thinning units retain vegetation along accessible roadsides to deter undesired pioneering of user-created trails. This could include biomass size trees being left uncut in order to meet this objective. Vegetation retention would not be required along roadsides with fill slopes or cutbanks as these provide adequate barriers.
- Use only marked cut trees as rub trees during skidding.
- During prescribed burning:
 - Do not re-ignite patches where fire did not carry through to promote mosaic conditions.
 - Limit mortality in thinned units to less than 10% of all trees, and in unthinned units to less than 25%.
 - Take necessary measures to retain clumps of multi-aged trees and throughout PACs (PACs are located in Stands 05, 06, 51 and 52) when implementing prescribed burning.
- The mark of trees greater than 30 inches in the aspen and meadow units would be reviewed by the District Silviculturist and Wildlife Biologist.

Visual Resources

Permitted Sites

- Manage to a Visual Quality Objective (VQO) of Partial Retention⁶; provide a natural appearing forest setting within the context of the developed winter sports site.
- Dodge Ridge (Stands 89 and 82) and approximately ¾ mile of FS Road 04N25: VQO – Partial Retention.
 - Leave vegetative screen adjacent to FS Road 04N25 to prevent/minimize opportunities for OHV incursion.

Proposed Wild and Scenic Rivers

- Manage to a VQO of Retention⁷; do not locate landings within ¼ mile of the river.
- Stands within or partially within Proposed Wild and Scenic River corridor (Stands 06, 50A, 58, 59, 63):
 - Emphasize natural appearing openings.
 - Maintain tree density along the Wild and Scenic River corridor (for a distance of 100 feet from the edge of the river, Stands 58 and 59) to provide a natural appearing forest canopy and

⁶ Partial Retention: Management activities remain visually subordinate to the characteristic landscape. Meet within 2 growing seasons.

⁷ Retention: Management activities are not visually evident. Meet within 1 growing season.

understory cover. In areas where management activities occur, slash should be treated (removed/chipped/ piled and burned).

- Retain vertical diversity and vegetative clusters.
- Do not remove trees within the Wild and Scenic River - Wild classification section of Stands 50A and 59. Girdling of encroaching conifers may occur within aspen stands in 50A.

Scenic Corridor (Stands 52, 54, 55, 57, 58, 59, 60, 62, 91, 92 and 93)

- Scenic Corridor (includes areas adjacent to Crabtree Road to Gianelli and Crabtree Trailheads and Aspen Pack Station): VQO is Retention in foreground view areas, or Partial Retention when seen from greater than ½ mile distance.
 - Do not locate landings within 100 yards of roadways. Screen landings with residual vegetation. Existing landings located within the corridor that are re-used should not exceed ¼ acre in size and would have irregular edges and appear as other openings either natural or created (e.g. natural appearing edges utilizing clusters where possible and irregular lines).
 - Forest health units partially within Scenic Corridor (Units 52,55,57,62, and 91) and Oak/Pine enhancement units partially within Scenic Corridor (Units 54,58,59,60,92, and 93):
 - Retain residual shade component within developed recreation sites (distance between crowns should not exceed 20 to 30 feet).
 - Retain vertical diversity and cluster appearance along road corridor and within developed recreation sites.
 - Residual tree density along FS Road 04N25 (between FS Road 04N26 and FS Road 04N02Y), FS Road 04N26 (Crabtree Road), FS Road 04N26B, FS Road 04N26B1 and FS Road 04N47 (Gianelli Road) road corridors should retain vertical diversity and a clustered distribution adjacent to the road and Wild and Scenic River corridor (for a distance of 50 feet from the edge of the road and/or river) to provide a natural appearing forest canopy and understory cover. In areas where management activities occur, slash should be treated (removed/chipped/piled and burned).
 - Low cut all stumps, maximum stump height of 4 inches, along the FS Road 04N25 (between FS Road 04N26 and FS Road 04N02Y), FS Road 04N26, FS Road 04N26B, FS Road 04N26B1, and FS Road 04N47 (within 50 feet of road).
 - Stands 29, 49, 52, 54, 55, 57, 58, 58A, 59, 60, 60A, 61A, 63, 92, and 93
 - During and after underburning, retain vertical diversity and cluster appearance along road corridors and within developed recreation sites.
 - Trailheads and Campgrounds: VQO – Partial Retention.
 - Forest health treatment within the campground should focus on reducing immediate hazards, leaving the healthiest trees for shade canopy. Retaining adequate cover for shade is imperative in equestrian camping facilities.
 - Retain vegetation between sites to provide screening between sites and retain vertical diversity within the campground. Provide at least 10 to 15 feet of separation between islands or groups of trees or shrubs.

Wildlife

- Flag and avoid confirmed marten rest site⁸ structures from project activities with a 100-foot radius buffer.

⁸ A confirmed rest site is defined as any structure (woody [live or dead] or rock) where a marten has been observed appearing to seek protection from the elements or a predator (Zielinski, pers.comm.).

- Conduct surveys to protocol for Willow Flycatcher in potentially suitable habitat (Lily Lake and Round Meadow) and apply a LOP if surveys confirm presence.
- Table 6 lists the Limited Operating Periods for wildlife site protection.

Table 6 Wildlife Limited Operating Periods

Stands	Limited Operating Period*	Species
05, 06, 50	February 15 through September 15	Northern Goshawk
51, C18	March 1 through August 15	Spotted Owl
58, 59, 60, 60A, 61A	May 1 through July 31	Marten
05, 06	June 1 through August 15	Willow Flycatcher

* LOP may be lifted by Forest Service biologist based on survey results.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

Federal agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). The following alternative was considered but eliminated from further study in this EA.

a. 30 inch Maximum Diameter Limit

This alternative would be similar to the Proposed Action, but with a 30 inch maximum diameter limit for all treatments. It would modify treatments on approximately 250 acres in 12 stands and 6 plantations. It was considered but eliminated from detailed study because it does not meet the purpose and need for the following reasons.

- **Conifer Encroachment:** (Aspen stands and meadows – stands 06, 50A, 52A, 58A, 60A, 61A, 84A, 90A) a 30 inch diameter limit would retain large conifers within aspen stands providing seed that would compete with the regenerating aspen; these conifers were determined to have established post-1850 (the beginning of system alteration).
- **Insect and Disease** (Plantations – in and adjacent units C4, C5, C7, C19, S4, S34. Includes portions of Stands 52, 91, and 92): a 30 inch diameter limit adjacent to the 6 plantations would retain large trees with high mistletoe infection ratings that would continue spreading mistletoe to susceptible smaller trees, reducing forest health, and negating the treatment in and adjacent to these areas.
- **Insect and Disease** (Stand 55): a 30 inch diameter limit in Stand 55 would create a safety hazard by retaining large trees with compromised root systems adjacent to the ski area and cross-country ski trails, with no protection from wind and snow. Also, retention of trees greater than 30 inches in Stand 55 within gaps around annosum pockets would reduce the effectiveness of the physical barrier provided by conversion to pine allowing a conduit for the continued spread of annosum between firs.

2.4 COMPARISON OF ALTERNATIVES

Table 7 provides a summary of the effects of implementing each alternative. Information in the table is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives.

Table 7 Comparison of Alternatives

Indicator	Alternative 1 (Proposed Action)	Alternative 2 (No Action)	Alternative 3 (Non-Commercial Funding)
Forest Health (resiliency)	Improves	No improvement	No improvement
Stand Density	Decreases	Increases	Declines slightly then return to current levels
Stand Vigor	Increases	Declines	No change
Stand Susceptibility to Future Disturbances	Less susceptible	More susceptible	Remain susceptible
Re-introduction of fire to fire adapted systems	Yes	No	Yes
Meadow and Aspen Habitat	Increases	Declines	Declines
Aspen Stands	Many restored	Many lost in the near future	Many lost in the near future
Diversity across the Landscape	Increases	Decreases	Decreases
Erosion Mitigation	Yes	No	Yes
Mitigation of Resource Impacts (roads, trails and developed recreation)	Yes	No	Yes
User Safety	Increases	No Increase	No Increase

Table 8 Economics Comparison of Alternatives

	Alternative 1 (Proposed Action)	Alternative 2 (No Action)	Alternative 3 (Non-Commercial Funding)
Total Prep/Admin Costs*	\$361,080.00	\$0.00	\$361,080.00
Total Cost to Implement Additional Activities	\$1,126,150.00	\$0.00	\$1,126,150.00
Value of Material Removed Through Thinning	\$532,465.72	\$0.00	(\$1,078,830.05)
Total Revenue/Cost	(\$954,764.28)	\$0.00	(\$2,566,060.05)

* Excluding NEPA analysis

3. Environmental Consequences

This section summarizes the physical, biological, social and economic environments of the affected project area and the potential changes to those environments due to implementation of the alternatives. It also presents the scientific and analytical basis for comparison of alternatives presented in the chart above.

All Biological Evaluations (BEs), Biological Assessments (BAs), Management Indicator Species Reports and Resource Specialist Reports prepared for this project are incorporated by reference in this EA. They are located in the project file and are available upon request.

3.1 EFFECTS RELATIVE TO ISSUES

The Forest Service identified two (2) relevant issues raised during scoping: 1) maintaining Visual Quality; and, 2) impacts on operations and visitor use for an existing Winter Sports Resort special use permits (see 1.6 Public Involvement and 1.7 Issues). The purpose and need of the project and design of the proposed treatments are to maintain and/or enhance visual quality within the project area. Indicators used in the analysis of effects associated with visual quality are forest health, stand vigor, stand susceptibility to future disturbance, and diversity across the landscape. The landscape analysis results suggest the proposed action meets all Visual Quality Objectives and achieves the highest visual quality of the alternatives considered (Table 7). The analysis indicates impacts to both Visual Quality and recreation special use permit operations and uses are addressed through the design elements for Visual Resources and Recreation (2.2 Design Elements Common to All Action Alternatives) which would reduce or eliminate negative impacts.

3.2 EFFECTS RELATIVE TO SIGNIFICANCE FACTORS

This section describes the context and intensity factors which provide a basis for determining if an action would have significant effects to the human environment (40 CFR 1508.27). It provides brief, yet sufficient evidence and analysis for the responsible official to determine whether to prepare an Environmental Impact Statement or a Finding of No Significant Impact.

Context

Context is a site specific action that by itself does not have international, national, regional, or statewide importance. The Gooseberry project, located on the Summit Ranger District, proposes treatment on 2,860 acres of the 898,000 acre Stanislaus National Forest. The area experiences high recreation use and contains scenic views, Dodge Ridge Winter Sports Area, Aspen Pack Station, and multiple trailheads and campgrounds. The project meets management direction for providing economic benefits to the local community, maintaining diversity of plants and animals, addressing fire and fuels concerns, improving habitat for wildlife, controlling insect and disease levels and their impacts on forest resources, providing a wide range of recreation opportunities, protecting and improving riparian areas, managing of sensitive species, managing timber resources, providing a safe and effective transportation system, meeting visual quality objectives, and maintaining or improving water quality while managing for the proposed Wild and Scenic River that is present in the project area (USDA 2010a, p. 5-7).

Intensity

Intensity means the degree to which the Alternatives would involve one or more of the following ten factors.

1. Impacts that may be both beneficial and adverse.

The direct and indirect effects of the alternatives are addressed here. Cumulative effects are addressed below under intensity factor 7.

Air Quality

Direct and Indirect Effects

Alternative 1 (Proposed Action)

The action alternatives would remove approximately 18,612 tons of biomass (size class 4 – 10 inches dbh), the material most likely to be consumed in a wildfire. In the event of a wildfire this would reduce PM₁₀ (particulate matter less than 10 micrometers in diameter) emissions by approximately 112 tons on these acres. Prescribed burning would further reduce surface fuel loading under specific conditions, limiting the release of emissions. This would limit the amount of fuels available should a wildfire occur within the project area resulting in the less emissions (Fire and Fuels Report pp. 17 – 19).

Alternative 2 (No Action)

The material mentioned above would not be removed and prescribed burning would not occur under this alternative. Thus, emissions of PM₁₀ and other emission types would not be reduced in the advent of unwanted wildfires⁹ resulting in negative effects due to uncontrolled release of emissions. In the event of a severe wildfire release of pm₁₀ emissions would be approximately 926.3 tons compared to 583.5 tons following treatments proposed in Alternative 1 (Fire and Fuels Report p. 18).

Alternative 3 (Non-Commercial Funding)

The effects of Alternative 3 would be similar to those described for Alternative 1.

Aquatics

Direct and Indirect Effects

Alternative 1 (Proposed Action)

It was determined that this alternative may affect individuals, but is not likely to contribute to the need for Federal listing or result in loss of viability for the Sierra Nevada yellow-legged frog (SNYLF) or the Yosemite toad (Aquatics BE, p. 27). It was determined that the project would not affect any other threatened, sensitive, or candidate aquatic species (Aquatics BE, p. 26-27). The thinning, burning and road work has the potential to increase the amount of sediment delivered to streams, but this would be mitigated through the implementation of BMPs, resulting in minimal effect to aquatic habitats. Meadow restoration may have a small beneficial effect downstream of the meadows on aquatic habitat.

There is a potential for a negative effect from the borate compound application, but it does not pose a significant risk to habitat in streams, unless a large spill occurred. This would be highly unlikely given the BMPs prescribed for its application.

Alternative 2 (No Action)

This alternative would result in a minor to moderate potential for detrimental effects on SNYLF habitat. If meadow restoration does not occur there is a risk to frog habitat at Round Meadow and Lily Lake if the headcuts begin to advance further upstream. This alternative would have no effect on other aquatic species or habitat.

⁹ Fires managed for multiple objectives may have suppression resources concentrated on portions of the fire that are threatening lives, homes, critical infrastructure such as power lines, or other high-value natural resources. Fire managers may use less aggressive or minimal actions in other areas where the fire is accomplishing a benefit.

Alternative 3 (Non-Commercial Funding)

The effects of Alternative 3 would be similar to those described for Alternative 1.

Botany

Direct and Indirect Effects

Alternative 1 (Proposed Action)

There are no known occurrences of sensitive plants in the project area. There is unsurveyed suitable habitat for *Lomatium stebbinsii* in two areas. Any *Lomatium stebbinsii* that could be present would not be affected by the actions that are proposed for that unit. A moss species within the project area could possibly be *Bruchia bolanderi* (Sensitive Plant BE, pp. 8-9). Implementation of recommended management requirements would minimize or eliminate possible adverse effects on sensitive species (Sensitive Plant BE, pp. 3-4). This alternative would benefit fens within areas that would be fenced as part of restoration treatments (Botany Report, p. 3).

Alternative 2 (No Action)

This alternative could result in minor indirect effects on *Lomatium stebbinsii* if any individuals are present and a high intensity fire occurred due to no thinning (Sensitive Plant BE, p. 10). The moss potentially *Bruchia bolanderi* would be adversely affected if the water table drops significantly, creating dryer in dry conditions at the site (Sensitive Plant BE, p. 10). Since no restoration treatments would occur, fens would not be protected. Without restoration of a headcut and protection livestock, the fens would decline in condition (Botany, p. 4).

Alternative 3 (Non-Commercial Funding)

The effects of Alternative 3 would be similar to those described for Alternative 1.

Cultural Resources

Direct and Indirect Effects

Alternative 1 (Proposed Action)

This alternative would not have a negative effect on cultural resources, but has the potential to uncover previously unknown cultural resources, where deposits are largely subsurface. The treatments proposed would reduce the possibility of damage to historic sites by reducing the risk of a high severity fire (Cultural Resource Management Report pp. 2-3).

Alternative 2 (No Action)

This alternative would not reduce fuels around cultural heritage sites, which would increase the risk of destruction should a wildfire occur (Cultural Resource Management Report p. 3). Alternative 3 (Non-Commercial Funding)

The effects of Alternative 3 would be similar to those described for Alternative 1.

Economics

Direct and Indirect Effects

Alternative 1 (Proposed Action)

The Proposed Action would provide the greatest economic benefit to the local community, as it would create the most employment opportunities and materials for local mills and biomass plants. Of the two action alternatives the proposed action would generate the most natural resource benefits, in restoration and resource impact mitigations and at a lower cost than Alternative 3 (Economic Analysis, p. 12).

Alternative 2 (No Action)

Alternative 2, No Action, would generate no employment opportunities or materials for local mills. Costs would be lowest for Alternative 2, but would result in no restoration actions occurring (Economic Analysis, p. 12).

Alternative 3 (Non-Commercial Funding)

This alternative would generate some employment opportunities and provide materials for use only in biomass plants. Since no sawtimber would be produced under this alternative, less revenue would be generated than from Alternative 1. This would reduce the funds available to complete the non-revenue generating activities, such as meadow restoration, road work, hand thinning, etc. (Economic Analysis, p. 12-13).

Fire and Fuels

Direct and Indirect Effects

Alternative 1 (Proposed Action)

This alternative would reduce flame length, rate of fire spread, and fireline intensity which would allow for more cost effective suppression efforts during unwanted wildfires using hand tools and fire suppression personnel. This alternative would also increase canopy base height. The lower flame length, slower rate of spread, lower fireline intensity, and higher canopy base height would allow for the reintroduction of low intensity fire as a management tool to gradually restore or maintain conditions approximating the historic fire regime (Fire and Fuels Report pp. 14 – 15).

Prescribed burning would reduce surface fuel loading under controlled conditions. This would limit the amount of fuels available should a wildfire occur within the project area resulting in less severe fire effects (Fire and Fuels Report pp. 17 – 18).

Alternative 2 (No Action)

This alternative would retain the existing condition, thus flame length, rate of fire spread, fireline intensity, and canopy base height would remain unchanged. As additional fuel is added to the existing fuel loads these numbers would increase and cause higher levels of mortality in all size classes in the event of a wildfire. Additional fuel loads would also limit the areas available for the reintroduction of fire as managed wildland fire and increase the risk of a stand replacing wildfire (Fire and Fuels Report pp. 16 – 17). A reduction of surface fuels would not occur under the No Action alternative, thus resulting in higher fire severity in the event of a wildfire (Fire and Fuels Report pp. 18 – 19).

Alternative 3 (Non-Commercial Funding)

The effects of Alternative 3 would be similar to those described for Alternative 1.

Hydrology

Direct and Indirect Effects

Alternative 1 (Proposed Action)

The proposed action would maintain water quality, watershed condition, and the integrity of waters and aquatic habitats. The proposed action would protect the beneficial uses of water and minimize water quality impacts through the use of BMPs (Hydrology Report, p. 32). Impacts would be minor or negligible and short-term. The mitigation and restoration actions under this alternative would reduce impacts resulting from the project activities and correct existing issues. This alternative would stabilize the channels through the proposed treatments and reduce sediment inputs to streams in the Bell Creek watershed over the long-term (Hydrology Report, pp. 21-25).

Alternative 2 (No Action)

This alternative would maintain the current condition. The probability of severe wildfire would not be reduced, and a severe wildfire has the potential to substantially degrade the watershed condition and water quality short-term. Existing road issues would not be corrected and no decommissioning would occur, allowing the disturbances from these roads to continue. Meadow restoration would not occur, allowing degradation to continue with continued loss of shallow water and meadow habitat (Hydrology Report, pp. 25-26).

Alternative 3 (Non-Commercial Funding)

The effects of Alternative 3 would be similar to those described for Alternative 1.

Noxious Weeds

Direct and Indirect Effects

Alternative 1 (Proposed Action)

This alternative includes weed treatments that would reduce the spread of ox-eye daisy within the project area. Defining sites and containing uncontrolled expansion of recreation sites would reduce noxious weed spread at these sites. The proposed actions do have the potential to introduce or spread noxious weeds, but proposed management requirements would reduce or eliminate this risk during implementation of the proposed treatments (Botany Report pp. 2-3).

Alternative 2 (No Action)

The proposed weed treatments and containment of expansion of recreation sites would not occur, thus not reducing the spread of existing areas of infection or decreasing the risk of new infestations around recreation sites (Botany Report p. 3).

Alternative 3 (Non-Commercial Funding)

The effects of Alternative 3 would be similar to those described for Alternative 1.

Range

Direct and Indirect Effects

Alternative 1 (Proposed Action)

The proposed action may have adverse short term effects on grazing, but should enhance range health in the long-term. Fencing of restoration areas would exclude grazing from these areas until vegetation is re-established, shifting grazing pressure to other areas. Implementation of the proposed actions may require temporary adjustments in numbers, season or use and grazing rotation and herding strategies (Range Report p 2).

Alternative 2 (No Action)

This alternative would not stabilize stream channels or reduce sediment inputs to streams. Aspen and meadow restoration would not occur, allowing degradation and continued loss of meadow habitat that is important to grazing (Range Report, p 3).

Alternative 3 (Non-Commercial Funding)

The effects of Alternative 3 would be similar to those described for Alternative 1.

Recreation/Visual Resources

Direct and Indirect Effects

Alternative 1 (Proposed Action)

This alternative would have a short-term impact on recreation and visual resources during and immediately following implementation. The long-term effects are expected to be nominal to positive. Within developed recreation sites conditions would be improved by the removal of declining trees that would become safety hazards. Opening areas adjacent to the road system(s) would create a greater visual distance which would potentially increase unauthorized, user created trails. Mitigation measures (pp. 26-27) are anticipated to minimize the occurrences of unauthorized motorized activity. Treatments would reduce stand density and canopy cover, the residual stand conditions would appear as natural forest and, in the long term after 2-3 years), the changes would not be readily evident (Recreation Report, pp. 9-10, 12).

Alternative 2 (No Action)

This alternative would result in no direct effects, but indirect effects of an increase in mortality, possibility of wildfire, insect, and/or disease infestation would produce a negative effect on recreation opportunities, visitor safety, and visual resources (Recreation Report, p. 10).

Alternative 3 (Non-Commercial Funding)

The effects of Alternative 3 would be similar to those described for Alternative 1.

Silviculture

Direct and Indirect Effects

Alternative 1 (Proposed Action)

This alternative would reduce stand density, competition for water and other resources, and infection levels of pathogens in treated stands and plantations, while increasing diversity across the project area. Horizontal and vertical heterogeneity would be increased in treated stands creating openings and low density groups of pine and oaks, while retaining interspersed denser clumps of fir and incense cedar. Adjacent untreated stands would add to the mosaic of forest structure and canopy cover variability across the project area. The meadow and aspen stand restoration aspects of this project would improve wildlife habitat, aspen health, and meadow function (Silviculture Report pp. 7-9).

In plantations, treatments would reduce stand density, increase species diversity and stand heterogeneity, while reducing infection levels of dwarf mistletoe. The reduced densities would increase stand vigor and more rapidly move stands to larger diameter size classes and promote heather, more resilient stands (Silviculture Report p. 9).

Alternative 2 (No Action)

Selection of this alternative would retain stand densities and species composition in the existing condition, and stands would continue on their current trajectory. Stand densities and pathogen levels would not be reduced. Stands would continue to be at high risk from drought conditions and other environmental stressors. Pathogen levels would remain elevated. Tree mortality rates would increase as trees are continued to be stressed from competition, insects, and disease. The shade intolerant pines and oaks would continue to decline and over time be replaced by firs and cedar. As the percentage of white fir increases, the annosum pockets would expand and spread, producing additional mortality.

Meadow and aspen stand restoration would not occur. Conifer encroachment would continue unabated. Meadows would further constrict as conifers continue to establish and aspen would continue declining with many stands being eliminated from the landscape.

In plantations stand vigor would decrease; making stands more susceptible to environmental stressors, including insects and pathogens. Stands with a significant presence of dwarf mistletoe would have infection rates rapidly increase; further reducing tree vigor. Under these stresses stands would decline, with decreased growth rates, increased mortality, and slower development into large diameter classes (Silviculture Report pp. 9-10).

Alternative 3 (Non-Commercial Funding)

This alternative would partially reduce stand densities and decrease inter-tree competition. Minor increases in species diversity and enhancement of oak and pine species would occur, but it would be limited and short-term. This alternative would have little effect on pathogens, as most higher levels of infection occur in large diameter trees. These trees would continue to serve as a source of inoculum for the residual trees and any new regeneration.

Restoration of meadows would be similar to Alternative 1, but with few encroaching conifers being removed, none greater than 12 inches dbh. This would have only short-term benefits to meadow restoration results, but long-term the seed source for new conifer establishment would not be reduced leading to continued conifer encroachment. Aspen stand restoration would not occur, as the majority of conifers present are above the 12 inch dbh limit, leaving high canopy cover and no release of aspen or promotion of aspen regeneration.

In plantations this alternative would provide similar effects as Alternative 1, with the exception of limited to no reduction in dwarf mistletoe infection within the units, since the large overstory trees that are spreading seed into the plantations would remain (Silviculture Report pp. 10-11).

Soils

Direct and Indirect Effects

Alternative 1 (Proposed Action)

This alternative would produce soil compaction, soil displacement and loss of soil cover from ground based treatments, grapple piling, shredding, and prescribed fire, but mitigation measures would reduce the impacts from treatments. Recent, similar ground based treatments have resulted in 18% or less disturbance with 8% or less detrimental¹⁰; soil cover being reduced by 10%, with less soil cover in areas mechanically piled or burned and higher where shredding occurs. Detrimental disturbance occurs on heavily used skid trails and landing. Most of the soils in Gooseberry are not high compaction hazard soil types, and mitigation measures include subsoiling. Road treatments to improve drainage and control of runoff would help stabilize road related gullies in several locations (Soils Report pp. 7-8).

Alternative 2 (No Action)

The No Action alternative would result in no long-term soil impacts. Additions to current fuel loads would increase the probability of a severe wildfire, which would potentially substantially degrade watershed condition in the short-term until the watershed recovers from the effects of the fire (Soil Report p. 8)

Alternative 3 (Non-Commercial Funding)

The effects of Alternative 3 would be similar to those described for Alternative 1.

¹⁰ Detrimental soil disturbance is reduction of 10 percent or greater in porosity.

Transportation

Direct and Indirect Effects

Alternative 1 (Proposed Action)

This alternative would meet administrative and public access needs and minimize erosion resulting from roads (Transportation Report p. 3). Road maintenance, reconstruction, and decommissioning would cause temporary ground disturbance. However, these activities would improve drainage on the roads and therefore reduce sediment inputs to streams in the long-term. Hydrologically connected stream segments would be treated, reducing the potential of sedimentation reaching streams in and downstream of the project area (Hydrology Report pp. 24-25). The addition of FS Road 04N26B1 to the NFTS would provide access for recreational activities and reduce congestion in Pine Valley Horse Camp.

Alternative 2 (No Action)

The transportation system in the project area would remain in its current condition. Maintenance, reconstruction, and decommissioning would not occur. Mitigation measures would not occur on hydrologically connected road segments, and the system as a whole would continue to deteriorate (Hydrology Report pp. 25-26).

Alternative 3 (Non-Commercial Funding)

The effects of Alternative 3 would be similar to those described for Alternative 1.

Wildlife

Direct and Indirect Effects

Alternative 1 (Proposed Action)

Under the Proposed Action, restoration actions would occur that will improve the existing condition trends of declining wildlife habitat condition. The proposed action would have no effect on any federally listed threatened and endangered terrestrial species. The proposed action may affect individuals but is not likely to result in a trend toward Federal listing or loss of viability for the following Sensitive species: Northern Goshawk, California Spotted Owl, American marten, Pacific fisher, and Willow Flycatcher (Wildlife BE, p. 34).

Alternative 2 (No Action)

Under No Action, restoration actions would not occur and the existing condition trends of declining wildlife habitat condition would continue. In particular, aspen, meadow, long-term forest cover, and Sierra mixed conifer species composition would continue to decline and move further away from reference conditions.

Alternative 3 (Non-Commercial Funding)

Under Alternative 3, restoration actions would have limited effectiveness in improving wildlife habitat conditions. Aspen restoration would be ineffective as the majority of conifers present are above the 12 inch dbh limit, and canopy cover would limit the release of aspen and aspen regeneration. Similarly, prescriptions would have limited effectiveness in improving meadow extent, maintaining long-term forest cover, or improving altered species composition in Sierra mixed conifer forest.

2. The degree to which the proposed action affects public health or safety.

The two action alternatives would reduce the risk of severe wildfire, lowering the risk to the public, firefighters, and infrastructure within the project area. The reduction of fuels would reduce the amount of pollutants released if a wildfire occurred. Prescribed burning would be

done in a manner that reduces the amount of pollutants released, and timed to minimize emission impacts (Fire and Fuels Report pp. 17-18).

Alternative 1 (Proposed Action) would address declining forest health issues (tree decline and mortality in and around recreational sites), increasing public safety. Alternative 2 (No Action) would not address these issues and visitor safety and recreational values would be negatively impacted. Alternative 3 (Non-Commercial Funding) would have similar effects, but to a lesser degree, than the proposed action (Recreation Report, p. 10).

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

Alternative 1 (Proposed Action) would maintain and protect the desired characteristics of the Near Natural and Proposed Wild and Scenic River sections within the project area, and have no adverse effect on these areas. Alternative 2 (No Action) would retain the existing condition, which has greater potential for a severe wildfire to occur, which would negatively affect these features. Alternative 3 (Non-Commercial Funding) would have similar effects, but to a lesser degree, as the proposed action (Recreation Report, p. 10-11; Hydrology Report, p. 24-26).

4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.

The basic concept of Alternative 1 (Proposed Action) – thinning trees; restoration of aspen and meadows; removal of noxious weeds; work on roads, trails and recreation sites; and re-introduction of fire – is generally not considered controversial. Removal of large diameter trees may be considered controversial by some groups, but this is proposed for only 5 percent of the project area, and is consistent with the Forest Plan (USDA 2010a) and Sierra Nevada Forest Plan Amendment (USDA 2004), as well as National and Regional directives.

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

The effects on the human environment from the action alternatives are not uncertain and do not involve unique or unknown risks. The proposed activities of harvesting trees; pruning; riparian and meadow restoration; removal of noxious weeds; work on roads, trails and recreation sites prescribed fire; and pile and burn have all been previously implemented with known effects.

6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

This project does not set a precedent that would significantly affect future projects. Future projects would be considered, evaluated, and analyzed separately on their own merits.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.

Past activities within the planning area have resulted in the existing condition. Additional past activities beyond the planning areas as well as present and future activities, which vary in extent by resource, are addressed below.

Air Quality

Cumulative Effects

Alternative 1 (Proposed Action)

There is a cumulative increase in emissions from prescribed fire associated with these projects and others on the Stanislaus National Forest, Yosemite National Park and private lands within the area.

This is mitigated by utilizing the Best Available Control Measures (p.17). The Tuolumne County Air Pollution Control District coordinates timing of burns to minimize smoke emission impacts in the air basin (Fire and Fuels Report p.18).

Alternative 2 (No Action)

There would be a decrease in cumulative emissions associated with prescribed fire on the Stanislaus National Forest, Yosemite National Park, and adjacent private lands by not burning the proposed acres in the Gooseberry project. There is a potential for degradation of air quality within the air basin from smoke produced by unwanted wildfire in combination with pollutants from other sources. If a wildfire occurred in the project area smoke emissions would not be minimize by proper time of burning and reduced fuel loads (Fire and Fuels Report p.19).

Alternative 3 (Non-Commercial Funding)

The effects of Alternative 3 would be similar to those described for Alternative 1.

Aquatics

Cumulative Effects

Alternative 1 (Proposed Action)

The spatial boundary for the cumulative effects analysis is the same as the project area. The reason for this bounding is because all of the streams that provide suitable habitat for the Sierra Nevada yellow legged frog originate entirely within the project boundary, and the habitat for Yosemite toad is presumed to be unoccupied. The only other management action occurring is grazing. Grazing is having a negligible to minor impact on the habitat suitability, and the current pattern of livestock grazing is expected to continue into the future and is not likely to result in impacts greater than those currently occurring (Aquatics Report pp. 24-25).

Alternative 2 (No Action)

The effects of Alternative 2 would be similar to those described for Alternative 1

Alternative 3 (Non-Commercial Funding)

The effects of Alternative 3 would be similar to those described for Alternative 1.

Economics

Cumulative Effects

Alternative 1 (Proposed Action)

The cumulative impact of this alternative in conjunction with other present and future projects would be to positively affect local industries dependent on a steady supply of timber and biomass fuel chips. This in turn could positively affect the ability of the Forest to conduct further restoration projects due to the retention of resources (mills, loggers, etc.) to harvest and/or utilize the sawtimber or chips (Economic Report p 12).

Alternative 2 (No Action)

The cumulative effect of no action would negatively affect local industries dependent on a steady supply of timber and biomass fuel chips. This in turn would negatively affect the ability of the Forest to conduct further restoration projects due to the lack of infrastructure available to harvest and utilize the sawtimber and biomass products (Economic Report p 12).

Alternative 3 (Non-Commercial Funding)

The effects of Alternative 3 would be similar to those described for Alternative 1, but to a lesser extent due to low levels of monetary exchange, and it would produce no sawtimber for the local mill (Economic Report p 13).

Fire and Fuels

Cumulative Effects

Alternative 1 (Proposed Action)

The current environmental conditions serve as a proxy for the impacts of past and present actions. The existing condition reflects the combined impact of all prior and current human actions and natural events that have affected the environment and might contribute to cumulative effects. The cumulative effects of this alternative would complement adjacent fuel treatments to modify fire behavior, reducing the risk of a large scale, severe wildfire and favor public and firefighter safety and efficient fire suppression (Fire and Fuels Report pp. 15-16).

Alternative 2 (No Action)

The cumulative effects of this alternative would not complement adjacent fuel treatments in reduce the risk of a large scale, severe wildfire, and would not favor public and firefighter safety and efficient suppression (Fire and Fuels Report pp. 17).

Alternative 3 (Non-Commercial Funding)

The effects of Alternative 3 would be similar to those described for Alternative 1, but for a shorter period.

Hydrology

Cumulative Effects

Alternative 1 (Proposed Action)

Equivalent Roaded Area (ERA) modeling for Alternative 1 show that the threshold of concern is not reached in any of the watersheds treated. Results of the field evaluation validate the ERA model prediction that the action alternative and other reasonably foreseeable future activities in the project watersheds are not expected to result in adverse cumulative watershed effects (Hydrology Report, pp. 28-32).

Alternative 2 (No Action)

Under Alternative 2 (No Action), there would be no risk of cumulative watershed effects (Hydrology Report, p. 32).

Alternative 3 (Non-Commercial Funding)

Under Alternative 3, the results are similar to Alternative 1, and the threshold of concern is not reached in any of the watersheds and the project watersheds are not expected to result in adverse cumulative watershed effects (Hydrology Report, p. 32).

Noxious Weeds

Cumulative Effects

Alternative 1 (Proposed Action)

Weed vectors that currently are in the project area and vicinity include: wildlife, road maintenance equipment, recreationists, private cars and trucks, Forest Service vehicles, off-highway vehicles (OHVs) such as motorcycles and four-wheel drive vehicles, horseback riders, and range cattle. There is one pack station, one ski area, three trailheads, and two horse camps in the project area. The area

gets lots of visits from people coming from out of the area. These vectors would continue to spread weeds into the project area. This alternative would reduce the existing populations and limit spread of noxious weeds. The treatments in this alternative, would increase light and expose mineral soil that would increase the vulnerability of the area to weed establishment through the above vectors (Noxious Weed Report pp. 3-4).

Alternative 2 (No Action)

The vectors described above in Alternative 1 would continue to be present. The noxious weed eradication would not occur and populations would not be reduced in the project area. Since no vegetation treatments would occur, there would not be an increased vulnerability for noxious weed establishment from increased light and exposed mineral soil in the area.

Alternative 3 (Non-Commercial Funding)

The cumulative effects of Alternative 3 would be similar to those described for Alternative 1.

Range

Cumulative Effects

Alternative 1 (Proposed Action)

This alternative is not expected to result in any long-term adverse off-site cumulative effects to grazing outside the project boundaries. The vegetative treatments are relatively low intensity and are expected to enhance rangeland health and water quality (Range Report p. 3).

Alternative 2 (No Action)

No changes to the existing condition; therefore, no cumulative effects would occur (Range Report p. 3).

Alternative 3 (Non-Commercial Funding)

The cumulative effects of Alternative 3 would be similar to those described for Alternative 1.

Recreation/Visual Resources

Cumulative Effects

Alternative 1 (Proposed Action)

Vegetation treatments would improve vegetative and watershed resources within the analysis area, while also reducing potential negative impacts to recreation and visual resources over the long-term (Recreation Report p. 10).

Alternative 2 (No Action)

No changes to the existing condition; therefore, no cumulative effects would occur (Recreation Report p. 10).

Alternative 3 (Non-Commercial Funding)

The cumulative effects of Alternative 3 would be similar to those described for Alternative 1.

Silviculture

Cumulative Effects

Alternative 1 (Proposed Action)

This alternative would enhance the landscape effect of ecological restoration in combination with the two studies being implemented on the adjacent Stanislaus-Tuolumne Experimental Forest and the Two-mile Ecological restoration project. The improved forest health and re-introduction of fire

would complement these fuel reduction projects – Pinecrest Interior, Pinecrest Fuel Reduction, Strawberry Fuel Reduction, and Phase II Fuel Reduction by reducing the probability of severe wildfire in the area and serve to provide increased safety to firefighter personnel in the event of a wildfire in the area (Silviculture Report p. 9).

Alternative 2 (No Action)

This alternative would allow the current condition and trajectory of stands to continue. This would allow the higher density stands to be a source of increased insect activity that would likely expand into adjacent areas. The project area would not complement the adjacent areas in improving forest health and diversity.

Alternative 3 (Non-Commercial Funding)

The activities under this alternative would do little to enhance the landscape effect of ecological restoration, as much of the restoration aspects of the project would not occur. The project would not complement the other restoration projects, the adjacent Stanislaus-Tuolumne Experimental Forest and the Two-mile Ecological Restoration project. This alternative would address fuels concerns and allow re-introduction of fire; but with the limited enhancement of forest health that would be short-term, and mortality rates would be expected to remain high. In the long-term high mortality rates would continue to add to future fuel loading in the project area. Thus, this alternative would provide little additional complement long-term to the surrounding fuel reduction projects – Pinecrest Interior, Pinecrest Fuel Reduction, Strawberry Fuel Reduction, and Phase II Fuel Reduction. The probability of severe wildfire in the area would increase more rapidly than under alternative 1 (Silviculture Report p. 11).

Soils

Cumulative Effects

Alternative 1 (Proposed Action)

The soil cumulative effects are primarily focused on how the proposed ground-based treatments (Alternative 1) would add to existing or legacy disturbance. Legacy disturbance in the Gooseberry project is relatively low in natural stands and higher in the plantations. Poff (2002) reported 6 percent legacy compaction in old selection harvest natural stands and 16 percent in several old plantations. Control of present entry operations is expected to limit the overall disturbance footprint. As such the soil cumulative effect is expected to be small or negligible (Soils Report p. 8).

Alternative 2 (No Action)

This alternative would have no cumulative soil effects (Soils Report p. 8).

Alternative 3 (Non-Commercial Funding)

The cumulative effects of Alternative 3 would be similar to those described for Alternative 1.

Wildlife

Cumulative Effects

Alternative 1 (Proposed Action)

The current environmental conditions serve as a proxy for the impacts of past and present actions. The existing condition reflects the combined impact of all prior and current human actions and natural events that have affected the environment and might contribute to cumulative effects. The proposed action is a restoration prescription designed to “reverse” the changes in habitat condition that are moving away from desired reference conditions. The proposed actions will assist the recovery of this altered landscape and provide habitat conditions more closely approximating the natural setting under which the wildlife has evolved.

Alternative 2 (No Action)

Under No Action, the trends resulting in declining habitat condition identified in the existing condition would continue.

Alternative 3 (Non-Commercial Funding)

The effects of Alternative 3 would be similar to those described for Alternative 1.

8. **The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.**

Heritage resources have been considered in all aspects of this project. The entire area has been surveyed. The project is designed to protect and avoid disturbance of all eligible sites (no listed sites are located within the project area) during implementation. No effect is anticipated to occur to any cultural or historic resources (Cultural Resource Management Report, p. 1). No scientific areas are within the project boundary.

9. **The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.**

The Wildlife BE and Aquatic BE prepared for this project determined the proposed action would have no effect on any Federally Threatened and Endangered or Proposed species or Designated Critical Habitat. The BEs determined that the action area is outside the geographic range of any T&E species.

10. **Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.**

Alternative 1 (Proposed Action) was developed in accordance with and does not threaten to violate any Federal, State, or local laws or requirements imposed for the protection of the environment (i.e. Endangered Species Act, National Historic Preservation Act, Federal Clean Water Act, Executive Order 11988 for Floodplain Management, or the Clean Air Act).

The action alternatives are in compliance with the Travel Management Rule, and protect the resources, promote the safety of all users, and minimize conflicts among the various uses (36 CFR Part 212).

The Forest Service would obtain the required permits from the appropriate county, state, and federal regulatory agencies prior to implementation.

4. Consultation and Coordination

The Forest Service consulted the following individuals, Federal, State, and local agencies, tribes and non-Forest Service persons during the development of this Environmental Assessment.

Interdisciplinary Team

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John Nelson	ID Team Leader/EA Writer/Silviculture
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Rebecca Johnson	Fire and Fuels
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Tom Durston	Logging Engineer
Lisa Dehart	Heritage Resources
Margaret Willits	Botany
Julie Martin	Recreation
Alex Janicki	Soils
Maria Benech	Silviculture
Steve Holdeman	Aquatics
Martin MacKenzie	Pathologist
Beverly Bulaon	Entomologist
Susan Forbes	Range

Federal, State and Local Agencies

Tuolumne County Planning Department
Tuolumne County Board of Supervisors
CalFire

Tribes

Tuolumne Band of Me-Wuk Indians

Others

Josh Bloom	Aspen Meadow Pack Station
John Buckley	Central Sierra Environmental Resource Center
John Turner	Audubon Society
Sally Helm	Dodge Ridge Winter Sports Area
Benny Cassenetto	Range Permittee
Chuck Knowles	Tuolumne County Trails Council
Scott Lewis	Twain Harte Horseman
Bob Magee	Back Country Horsemen Mid-Valley Unit

References

- CREP 2008. Clavey River Ecosystem Project: Clavey River Watershed Assessment, Volume I
March 2008.
- Hawksworth, F.G. 1977. The 6-class dwarf mistletoe rating system. General Technical Report RM-48. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station 7 p.
- Poff, R. 2002. Soil Porosity Survey for the Darby Fire, Stanislaus National Forest. Unpublished Report. R.J. Poff and Associates, Nevada City, CA.
- USDA 2000. Water quality management for forest system lands in California - best management practices. Pacific Southwest Region. Vallejo, CA.
- USDA 2002. Central Stanislaus Watershed Analysis. Stanislaus National Forest. Sonora, CA.
- USDA 2004. Sierra Nevada Forest Plan Amendment. Final supplemental environmental impact statement and record of decision. R5-MB-046. Pacific Southwest Region. Vallejo, CA. 72 p
- USDA 2009. Soil Disturbance Field Guide. San Dimas Technology and Development Center. Forest Service. August 2009.
- USDA 2010a. Forest Plan Direction. Forest Service, Stanislaus National Forest, Sonora, CA. April 2010.
- USDA 2010b. An Ecosystem Management Strategy for Sierran Mixed-Conifer Forests. Pacific Southwest Research Station; General Technical Report PSW-GTR-220. Second printing with addendum, February 2010.
- USDA 2010c. Forest Service Manual 2500 – National Forest Resource Management, Chapter 2550 – Soil Management.
- USDA 2011. Forest Service Manual 2000 – National Forest Resource Management, Chapter 2020 – Ecological Restoration and Resilience.
- USDA 2012. Managing Sierra Nevada Forests. Pacific Southwest Research Station; General Technical Report PSW-GTR-237. March 2012.
- USDA 2012b. Forest Service Manual 2500, R5 Supplement – National Forest Resource Management, Chapter 2550 – Soil Management.