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North Fork Forest Recovery Project

Final Environmental Assessment



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Table of Contents

Preface	1
Changes between Draft and Final Environmental Assessment.....	2
1: Purpose and Need	4
Introduction.....	4
Project Location	4
Purpose and Need for the Proposed Action.....	5
Public Involvement and Tribal Consultation.....	16
Emergency Authorization to Expedite Implementation	18
2: Proposed Action	20
Treatment Types.....	20
Treatment Focus Areas.....	29
Project-Specific Forest Plan Amendments.....	43
Design Features	46
3: Environmental Impacts	46
Air Quality	47
Botany.....	51
Climate Change	59
Cultural Resources	68
Economics	69
Environmental Justice	65
Hydrology and Soils	71
Range	78
Recreation and Visual Quality.....	80
Silviculture.....	83
Transportation.....	98
Wildlife	100
References	131
Appendix A: Project Maps	139

Appendix B: Project-Specific Forest Plan Amendments and Substantive Requirements	153
Specific Definitions for Regional California Spotted Owl Amendments	153
Project-Specific Forest Plan Amendments.....	156
Substantive Requirements.....	171
Appendix C: Treatment Methods	180
Appendix D: Treatment Focus Areas.....	192
Appendix E: Herbicides	208
Grazing Restrictions	210
Appendix F: Design Features.....	212
Cultural Resources	212
Biological Resources	215
Hydrology, Soil, and Aquatic Resources.....	225
Herbicide Use	232
Recreation and Public Use	235
All Other Resources	237
Appendix G: Implementation Guide	242
Appendix H: Response to Comments	260

List of Tables

Table 1: Acronym list	viii
Table 2: Summary of Green Forest Thinning Treatment Acres.....	23
Table 3: Summary of Black Forest Treatment Acres	23
Table 4: Priority non-native invasive plant species.....	25
Table 5: Proposed single-ingredient herbicides, uses, application rates and methods.....	28
Table 6: WUI Treatment Focus Area acreage summary.....	30
Table 7: Suitable Habitat for the CSO using the CWHR classification system	32
Table 8: Wildlife Treatment Focus Area acreage summary	32
Table 9: Designated Lands Treatment Focus Area acreage summary.....	34
Table 10: Eligible Wild and Scenic River segments within the project area	34
Table 11: Summary of eligible Wild and Scenic River corridor acres	36
Table 12: 2021 Dixie Fire burn severity acreage within the project area	37
Table 13: Proposed ingress-egress routes.....	38

Table 14: Fire management feature mileage summary	42
Table 15: Fire management feature treatment acreage summary.....	42
Table 16: Primary and secondary NAAQS for particulate matter, measured in micrograms per cubic meter of air ($\mu\text{g}/\text{m}^3$).....	48
Table 17: Estimated pollutant emissions produced by burning 166,889 acres in prescribed fire and wildfire scenarios for the project area. All project acres and all vegetation types are included.....	51
Table 18: Rare species that occur in the project area and are analyzed for effects in this document	52
Table 19: Sensitive species that are not known to occur in the project area, but either occur in the direct vicinity or have high likelihood of habitat potential	53
Table 20: Priority non-native invasive plant species within the project area and vicinity	57
Table 21: Biomass Carbon transfer and maximum substitution potential live tree estimates based on Entity Guidelines tool analysis.....	60
Table 22: Sawlog Carbon transfer and maximum substitution potential live tree estimates based on Entity Guidelines tool analysis.....	61
Table 23: Census tract demographics within the project area, percentage of population by race	66
Table 24: Block group-level demographics within Tract 4, percentage of population by race .	66
Table 25: Block group-level demographics within Tract 5.02, percentage of population by race	66
Table 26: Characteristics and leaching potential for proposed herbicides.....	73
Table 27: Grazing allotments within and adjacent to the North Fork Forest Recovery Project	79
Table 28: Old-growth types, FIA forest type codes, and minimum criteria for old-growth status within the project area	88
Table 29: Working definitions for mature forest as applied to FIA data for forest types found within the project area	88
Table 30: Pre- and Post-Treatment CWHR Class Distribution	93
Table 31: Invertebrate Species – Summary of Effects Determinations for TES Species in the NFFRP	100
Table 32: Amphibian and Reptile Species – Summary of Effects Determinations for TES Species in the NFFRP.....	101
Table 33: Bird Species – Summary of Effects Determinations for TES Species in the NFFRP .	101
Table 34: Mammal Species – Summary of Effects Determinations for TES Species in the NFFRP	101
Table 35: Fish Species – Summary of Effects Determinations for TES Species in the NFFRP .	101

Table 36: Invertebrate Species – Listed, Proposed, Candidate and Sensitive Wildlife Species or their Habitat potentially occurring on the NFFRP and the Determination of Effects	102
Table 37: Reptile Species – Listed, Proposed, Candidate and Sensitive Wildlife Species or their Habitat potentially occurring on the NFFRP and the Determination of Effects.....	102
Table 38: Bird Species – Listed, Proposed, Candidate and Sensitive Wildlife Species or their Habitat potentially occurring on the NFFRP and the Determination of Effects.....	102
Table 39: Mammal Species – Listed, Proposed, Candidate and Sensitive Wildlife Species or their Habitat potentially occurring on the NFFRP and the Determination of Effects	103
Table 40: Fish Species – Listed, Proposed, Candidate and Sensitive Wildlife Species or their Habitat potentially occurring on the NFFRP and the Determination of Effects.....	103
Table 41: Pre- and Post-Treatment CSO Habitat Acres within PACs	108
Table 42: Pre- and Post-Treatment CSO Habitat Acres within HRCAs	108
Table 43: Summary of Pre- and Post-Treatment Habitat Acres in CSO Territories	110
Table 44: Pre- and Post-Treatment CSO Habitat Acres Across the NFFRP.....	111
Table 45: Treatment Summary of American goshawk habitat in the NFFRP Area.	114
Table 46: Pre- and Post-Treatment Acres of Suitable Habitat within American Goshawk PACs	114
Table 47: Selection of MIS for Project-Level Habitat Analysis for the NFFRP.	127
Table 48: Change in acres of coniferous forest MIS Habitat following the Proposed Action treatments	128

List of Figures

Figure 1: North Fork Forest Recovery Project Vicinity Map.....	5
Figure 2: Conceptual model of spotted owl habitat ecological areas of significance (USDA Forest Service 2019)	31
Figure 3: Illustration of the proposed permanent fire control line prescription	38
Figure 4: Illustration of the ingress-egress route prescription	40
Figure 5: Illustration of the fire management feature prescription in owl and goshawk PACs .	42
Figure 6: PM _{2.5} and PM ₁₀ emissions (tons/acre) calculated using Blue Sky Playground 3.5.2 for project-wide prescribed fire across 166,889 acres (Proposed Action) and a wildfire burning the same area (No Action)	51
Figure 7: Post timber harvest Erosion Hazard Rating (EHR) for the project area. Model assumes 50% effective ground cover remains post-harvest.	72
Figure 8: Cumulative Watershed Effects risk across analysis watersheds for the Proposed Action; modeled CWE risk shown for the year 2025. TOC is assumed at 12% for all watersheds.	76

Figure 9: Cumulative Watershed Effects risk across analysis watersheds for the No Action Alternative; modeled CWE risk shown for the year 2025, TOC is assumed at 12% for all watersheds.	78
Figure 10: Current and projected density and size metrics under the Proposed Action	91
Figure 11: Target residual density levels of stands following harvest, by species type for PAC and non-PAC stands, and projected density levels, in terms of maximum SDI.	92
Figure 12: Change in CWHR size classes following the Proposed Action	93
Figure 13: Change in CWHR density classes following the Proposed Action	94
Figure 14: Forest vegetation projections within the project area over the next 20 years.....	97

Table 1: Acronym list

Acronym	Term or Definition
AE	Acid equivalent
AGOS	American goshawk
AI	Active ingredient
APE	Area of potential effect
BA	Basal area
BAER	Burned Area Emergency Rehabilitation
BBWO	Black-backed woodpecker
BDA	Beaver dam analogue
CAA	Clean Air Act
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CFR	Code of Federal Regulations
CSO	California spotted owl
CWE	Cumulative watershed effects
CWHR	California Wildlife Habitat Relationship
DBH	Diameter at breast height
EA	Environmental Assessment
EHR	Erosion Hazard Rating
EPA	Environmental Protection Agency
GHG	Greenhouse gas
GTAC	Geospatial Technology and Applications Center
HIP	Heritage Implementation Plan
HRCA	Home Range Core Area
HRD	<i>Heterobasidion</i> root disease
HWP	Harvested wood products
IPCC	Intergovernmental Panel on Climate Change
IRA	Inventoried Roadless Area
LRMP	Land and Resource Management Plan
LWD	Large woody debris (structure)
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NF	National Forest
NFFRP	North Fork Forest Recovery Project
NFS	National Forest System
NHPA	National Historic Preservation Act
NRV	Natural range of variation
NSAQMD	Northern Sierra Air Quality Management District
ORV	Outstandingly remarkable value (Wild and Scenic Rivers)
PAC	Protected Activity Center

Acronym	Term or Definition
PALS	Post assisted log structures
PNF	Plumas National Forest
PORFFA	Past, ongoing, and reasonably foreseeable future actions
RAVG	Rapid Assessment of Vegetation Condition after Wildfire
RNA	Research Natural Area
ROD	Record of Decision
rSDI	Relative stand density index
SBS	Soil burn severity
SHPO	State Historic Preservation Officer
SIA	Special Interest Area
SNFPA	Sierra Nevada Forest Plan Amendment
SOPA	Schedule of Proposed Actions
SPM	Standard protection measure
TES	Threatened, Endangered, and Sensitive species
TOC	Threshold of concern
USDA	US Department of Agriculture
USFS, FS	USDA Forest Service
VDT	Variable-density thinning
WUI	Wildland-urban intermix (or interface)
WSR	Wild and Scenic River

Preface

The U.S. Department of Agriculture (USDA) Forest Service, Plumas National Forest (PNF) is proposing to implement fuels reduction and forest restoration activities on 166,889 acres of National Forest System (NFS) lands on the Mt. Hough Ranger District of the Plumas National Forest.

We prepared this environmental assessment (EA) to determine whether implementation of these activities significantly affects the quality of the human environment and thereby requires the preparation of an environmental impact statement. By preparing this EA, we are fulfilling agency policy and direction to comply with the National Environmental Policy Act (NEPA) as described in the Code of Federal Regulations (CFR):

An environmental assessment shall:

- (1) Briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact; and
- (2) Briefly discuss the purpose and need for the proposed action, alternatives as required by section 102(2)(E) of NEPA, and the environmental impacts of the proposed action and alternatives and include a listing of agencies and persons consulted. (40 CFR 1501.5(c))

This document is organized in three parts, followed by references and appendices.

- **1: Purpose and Need** explains why the Proposed Action is necessary and provides ecological, social, and legal context for the North Fork Forest Recovery Project.
- **2: Proposed Action** describes proposed land management activities designed to meet the Purpose and Need, including project-specific Forest Plan amendments.
- **3: Environmental Impacts** describes the biological, physical, and social impacts of the Proposed Action and No Action Alternative.
- A list of **References** used in the development of this EA is included after part 3.
- **Appendices** provide supporting information for this EA.

Additional documentation, including specialist reports and georeferenced project maps, are available by request and in the [project record](#).

Changes Made to the Final Environmental Assessment

Several changes were made to the Final Environmental Assessment as result of the pre-decisional administrative review process, in addition to those previously made in response to public input. Here is a summary of the key changes:

1. **Mining Design Feature:** A new design feature (MIN-6) was added to ensure the protection of valid existing mining rights and accessibility.
2. **Fire Management Feature Clarification:** The document now explicitly states that fire management features will not be converted into off-highway vehicle (OHV) trails, or used for OHV recreation.
3. **Wild and Scenic Rivers:** Management direction and additional protections for eligible Wild and Scenic Rivers have been included, including design features (WSR-01 through WSR-10).
4. **Trail Classification Modification and Clarifications:** The proposed uses for the Mt. Jura trail have changed from allowing all motorized single-track vehicles, to allowing only Class 1 e-bikes. No other proposed uses for trails changed. However, to ensure consistency with Forest Service policy (USFS NRM E-Bike FAQs), all trails proposed to allow Class 1 e-bike use in the project are now designated as motorized (class 1 e-bikes only).
5. **Mature and Old-Growth Forests:** The EA defines mature and old-growth forests according to regional guidelines and describes an identification and review process for managing mature and old-growth stands following current USFS direction.
6. **Slope Restriction:** Additional direction has been included for conducting operations on slopes exceeding 35%. Mechanical operations are permitted on steep slopes if restrictions regarding skid trails, ground cover maintenance, and Road Construction and Maintenance (RCA) practices are followed. Consultation with district hydrologists and soil scientists is required when thinning on slopes greater than 35% to effectively mitigate sedimentation and erosion risks (HYD-17).
7. **Climate Estimates:** Carbon emissions have been recalculated in collaboration with the Regional Carbon Specialist, utilizing more precise project volume estimates for green trees in a predominantly burned project area.
8. **Forest Plan Amendments:** Minor edits were made to the Forest Plan Amendments for clarity. The region offered guidance on how to clarify several of them further.
9. **Range of Alternatives:** Objections regarding lack of alternative options were addressed by explaining in the EA (Alternatives Considered but Not Analyzed) why suggested alternatives did not meet the project's purpose and need.

10. **Herbicide Use Near Genesee Valley:** Concerns regarding herbicide use and mechanical work in a targeted area of Genesee Valley were acknowledged. The Forest is conducting site-specific adjustments in response to these concerns, and there will be a 562-acre exclusion zone directly abutting non-industrial private lands in Genesee Valley where no herbicide application or mechanical treatment will take place.
11. **Impacts to Spotted Owls:** Clarification was added to explain how burned areas were considered when delineating California Spotted Owl (CSO) habitat, and how mechanical and post-fire treatments may affect it.
12. **Black-Backed Woodpecker Habitat:** The EA was updated to better disclose how treatments may affect Black-Backed Woodpecker habitat, including both existing and post-treatment conditions and cumulative effects with other regional projects.
13. **Mt. Jura Trail:** The EA was updated to include a modified trail segment for the Mt. Jura Trail near Taylorsville. The alignment was adjusted slightly to accommodate community concerns about the original route.
14. **Minimization Criteria – Wildlife:** Concerns about trail impacts to wildlife and connectivity (particularly gray wolf habitat) were addressed. The minimization criteria have been updated to more specifically consider these impacts and are further discussed in the *Minimization Criteria* (located with the specialist reports).
15. **Minimization Criteria – Use Conflict:** Objections related to potential user conflict from e-bike designations were addressed. The minimization criteria worksheets were updated to demonstrate compliance with the Travel Management Rule and to explain the designation process. The need for these trails was identified through extensive community engagement, including via a survey conducted by Sierra Buttes Trail Stewardship, completed by 1,179 participants, 68% of whom identified as local residents. These findings guide the planning process for new trails and reflect the community's vision of creating connected accessible recreation and are further discussed in the *Minimization Criteria* (located with the specialist reports).
16. **Trail Maintenance Capacity:** Concerns that the Plumas National Forest already has more trails than can be maintained were addressed by clarifying maintenance needs and available resources for maintenance.

These changes reflect a commitment to addressing community and objector concerns, addressing any issues with clarity, and enhancing environmental protections.

1: Purpose and Need

Introduction

The PNF has experienced a series of recent large-scale wildfires that have dramatically impacted local communities and forestlands. Within the last five years, large-scale wildfires burned across over 65% of NFS lands within the PNF administrative boundary near more than 30 adjacent communities. In 2021, the Dixie Fire burned nearly a million acres and became the largest single wildfire in California's history. Many residents of Canyondam, Indian Falls, Greenville, Warner Valley, and other communities lost their homes and businesses in the Dixie Fire, while those in other communities in the North Fork Feather River drainage witnessed high-severity fire on surrounding forestlands.

Wildfires influence the long-term trajectory of ecosystems in ways that affect multiple NFS management objectives including ensuring public safety; providing a supply of timber and favorable water-flows; protecting watershed resources; supporting rural economies; restoring degraded or damaged ecosystems; providing recreation opportunities that create economic stability and jobs for local communities, and maintaining habitat for threatened, endangered, and other species of conservation concern.

The PNF is developing the North Fork Forest Recovery Project in partnership with Sierra Institute for Community and Environment to strategically enhance, restore, protect, and recover forest resources after recent large-scale wildfires. The 166,889-acre project area and nearby communities were heavily impacted by the 2021 Dixie Fire, 2019 Walker Fire, 2012 Chips Fire, and 2007 Moonlight Fire. Project objectives include protecting communities and infrastructure from the threat of wildfire in the short and long term; promoting resilient conifer forests through fuels reduction and strategic reforestation; protecting and enhancing critical wildlife habitat; providing safe and sustainable public access to forest resources; and providing recreation, interpretation, and educational opportunities.

Project Location

The North Fork Forest Recovery Project is located entirely within the Mt. Hough Ranger District of the PNF in California's northern Sierra Nevada mountains. The project area extends from the PNF boundary with Lassen National Forest in the Chips Creek Inventoried Roadless Area, up the North Fork Feather River Canyon to the southern tip of Lake Almanor, and down through Indian and Genesee Valleys. Some of the local communities in the project area include Belden, Crescent Mills, Greenville, Indian Falls, Seneca, and Taylorsville.

The project area includes reaches of both the North Fork Feather River and the East Branch North Fork Feather River. Water flowing from and through the project area is used to generate power at hydroelectric facilities in the Feather River Canyon. The project area is a primary source watershed for the State Water Project that provides water for more than 27 million Californians. The southern portion of the project area includes State Highway 70, an important transportation corridor and access point for electric utilities. State Highway 70 is prone to landslides, exacerbated in recent years due to impacts from catastrophic forest fires such as the 2018 Camp Fire, 2020 North Complex Fire, and 2021 Dixie Fire.

North Fork Forest Recovery Project

Mt. Hough Ranger District, Plumas National Forest

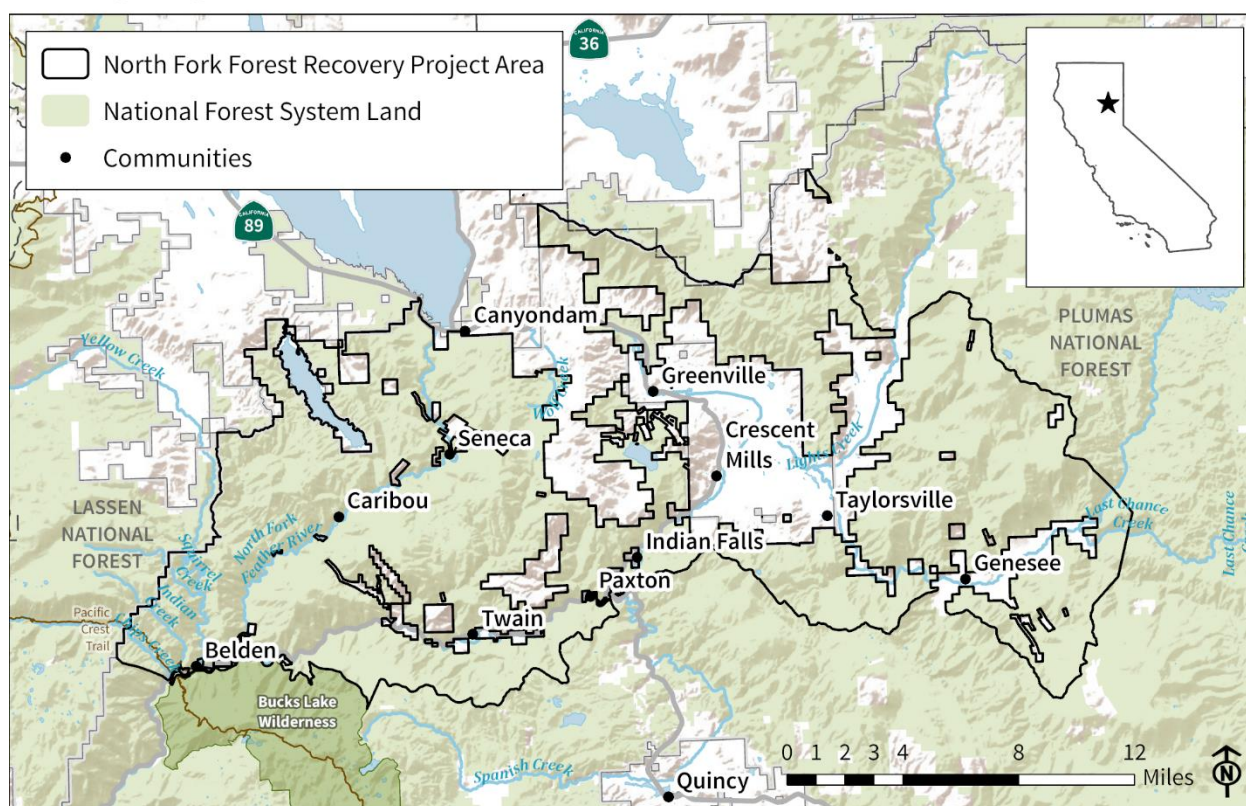


Figure 1: North Fork Forest Recovery Project Vicinity Map

Purpose and Need for the Proposed Action

The PNF is developing the North Fork Forest Recovery Project in partnership with Sierra Institute for Community and Environment to accelerate post-Dixie Fire forest recovery, reduce wildfire risk for local communities, and improve forest resiliency in the face of climate change. The project has two overarching purposes: 1) Community Protection and Strategic Fire Management, and 2) Forest and Watershed Health and Resilience.

Purpose 1: Community Protection and Strategic Fire Management

1.1: Reduce wildfire threats around communities and infrastructure

Burned areas adjacent to communities exhibit a range of post-fire conditions, including stands with high densities of fire-killed trees, and stands with a mix of snags, green trees, and understory vegetation.

Both fire-killed and live trees and shrubs contribute to hazardous fuel accumulations. When standing dead trees fall, they contribute to a fuel pulse that puts communities and adjacent unburned areas at risk. Stands in these conditions are highly conducive to the initiation and spread of crown fire under high fire weather conditions, and increase the potential for large, high-severity, stand-replacing fire events. This type of fire behavior increases the risk to communities and infrastructure.

There is a need to reduce both dead and live fuels and maintain reduced fuel conditions over the long term to protect communities and critical infrastructure. There is also a need to ensure safe access into and out of communities along ingress-egress routes and construct or maintain permanent fire control lines in strategic locations to provide firefighters with pre-planned, effective locations for fire suppression activities.

There is a need to reduce the risk of climate driven fire events. Changing climate conditions will increase the frequency of catastrophic fires if forest health is not maintained. Overstocked forest stands create conditions for fire to get into the canopy. Given increasing fire severity under a warming climate, proactive, science-based adaptation is needed to reduce risk not only near communities but across entire landscapes. Active forest management—including mechanical thinning, prescribed fire, and managed wildfire—is essential to build ecosystem resilience and reducing fire severity across scales (Prichard et al. 2021).

Desired conditions

- Within WUI Defense Zones, stands are fairly open and dominated primarily by larger, fire-tolerant trees. Surface and ladder fuel conditions are such that crown fire ignition is highly unlikely. The openness and discontinuity of crown fuels, both horizontally and vertically, result in a very low probability of sustained crown fire. (SNFPA ROD p. 40)
- Flame lengths are less than 4 feet on average in treated areas under 90th percentile weather conditions (98th percentile weather conditions in the WUI Defense Zone).
- Surface, ladder, and crown fuels are reduced to facilitate improved fire suppression efficiency, visual contact, structure defense, aerial retardant penetration to ground, and opportunities for contingency line construction and/or burnout operations.

- Less than 20 percent of the treated project area has crown fire potential under 90th percentile weather conditions (98th percentile weather conditions in the WUI Defense Zone).
- Safe ingress-egress routes (entrance and exit routes) provide ready access for fire suppression personnel while the public has effective evacuation routes out of the area.

1.2: Protect, manage, and interpret cultural resources

Important historic resources, including Native American sacred and ceremonial sites, traditional use areas and cultural resources, and other historic resources that post-date Euro-American arrival to North America have been impacted by recent wildfires. Some of these areas and resources were destroyed or damaged by recent wildfires and wildfire suppression activities, and all remain at risk from future wildfire. Cultures, lifestyles, and historic events of the northern Sierra Nevada region are often preserved through traditions, stories, and memories and are at risk of being lost through generations.

Desired conditions

- Culturally significant landscapes are restored and protected.
- Appropriate access to sacred and ceremonial sites and to tribal traditional use areas is maintained. Affected tribes and tribal communities are consulted to address access to culturally important resources and culturally important areas when proposing management that may alter existing access. Protection of inventoried sacred sites will be considered after appropriate assessment and consultation. (SNFPA ROD p. 26)
- The relationship between fire management and culturally significant plant species is considered. Where fuels treatments may affect tribes or tribal communities, or plants culturally important to them, they will be consulted on the development of burn plans, and approaches that accommodate traditional scheduling and techniques of fire and vegetation management will be considered. (SNFPA ROD p. 26)
- Meadow habitat supports plant populations important to tribes or tribal communities and provides for sustainable harvest for cultural use.
- Trail and recreational feature locations protect cultural resources and minimize resource impacts.

1.3: Improve safety for the public and forest workers

Hazard trees are those trees at risk of falling and injuring people or damaging property. Hazard trees along roads, property lines, buildings, trailheads, and other infrastructure and facilities threaten public safety as the trees deteriorate, become unstable, and eventually fall. Falling trees may strike nearby individuals and vehicles, or block road access and trap people. Away from roadsides, hazard trees can fall and injure firefighters, hikers, loggers, slash crews,

tree planters, and other forest workers. Hazard trees create dangerous situations for future prescribed burns or other resource management projects on public and private lands. Hazard trees on public lands can fall and damage property on neighboring private lands.

High snag densities and a complex arrangement of fallen trees, broken tops, and branches intermixed and suspended within an increasingly heavy shrub component create hazardous conditions. This combination will limit the ability of firefighters to control future wildfires safely and effectively, particularly in strategic locations for future fire suppression actions. There is a need to improve safety conditions for future fire suppression activities.

Desired conditions

- Hazard trees are mitigated to the extent feasible along motorized routes and non-wilderness trails, adjacent to property boundaries, or where needed to mitigate threats to critical infrastructure.
- Hazards to firefighters are reduced by managing snag levels in locations likely to be used for control in prescribed fire and fire suppression, consistent with safe practices and guidelines. (SNFPA ROD p. 46)

1.4: Provide diverse economic opportunities and invest in community partners

Authorized use of forest resources meaningfully contributes to the economic base of communities and counties that rely on the use of National Forests for employment, wages, and taxes. Projected population growth in California and increasing demand in this region contribute to increasing demand for recreation facilities and services throughout the PNF. Recreational sites such as campgrounds, day-use areas, and trails need post-fire repair and modernization or expansion to meet current and future demand. Repair, maintenance, and enhancement of these sites would support community economic development through a sustainable recreation industry.

There is a need to provide diverse economic opportunities through restoration activities and improved recreational sites. Industry depends on a predictable and economical supply of timber products off Forest Service land, to provide jobs within rural communities, provide payments for the wood products generated, and to provide useful wood products to the American public.

The Agency's limited capacity and reduced personnel create challenges for efficiently completing large, landscape-scale projects at the pace and scale necessary to address the wildfire crisis. The Agency identified the need for multiple partners, including tribal governments, and various tools. Meeting the challenge of implementing cross-boundary treatments across private and public lands within the forest's administrative boundary and

expanding opportunities for public involvement may be facilitated through partnerships. There is a need to invest in and maintain community partners to engage the public and increase capacity for implementing projects throughout the forest. Desired forest conditions require active partnerships for management of all resources.

Desired conditions

- Tourism and forest visitation supports local economies through protection and restoration of sustainable forest and recreation resources.
- A healthy forest products industry provides economic viability and support to the local infrastructure.
- Local economies are supported by providing for mineral exploration.
- Partnerships are utilized to maintain cultural integrity, recreation infrastructure, and to support Forest Service fuels and vegetation management and forest restoration activities.
- Additional markets are developed to support local economies as they deal with ongoing disruptions in traditional timber markets caused by changing climate and management responses that have shifted market supply and demand.

Purpose 2: Forest and Watershed Health and Resilience

2.1: Restore, improve, and maintain forest resource conditions

Historically, the project area was dominated by a frequent, low to mixed severity fire regime, where only 5-15 percent of conifer forest would be expected to burn at high severity with more than 75% basal area loss (Mallek et al. 2013). In recent large fires on the PNF (Minerva, Camp, Walker, Sheep, North Complex, Dixie, and Sugar), however, 50 percent of conifer forest burned at high severity. During these fires, over 203,000 acres on the PNF burned in large high-severity patches greater than 100 acres. Large high-severity patches lack natural seed sources and may take centuries to reforest naturally or may instead convert to non-forest vegetation types such as chaparral (Lauvaux et al. 2016).

The elimination of surface and ladder fuels in high-severity patches only reduces the risk of high-severity reburn for a short time. Fire-killed trees that were not consumed remain standing and contribute to ladder fuel loading across the burned landscape. These standing dead trees coupled with near-term shrub growth will lead to accumulations of dead and live fuels at high risk of re-burning at high severity, potentially hampering future fire suppression actions and reducing the potential for natural conifer regeneration. There is a need to manage post-fire fuels and reestablish forest cover within these large high-severity burn patches to prevent forest loss on the landscape. This more complex and variable fire history has critical

implications for restoration strategies following large wildfires, particularly when planning for forest structure and composition under changing climate conditions (Hessburg et al. 2021).

Outside these large high-severity burn patches, pre-fire ladder and surface fuels persist in overly dense remnant conifer stands. Although these remnant conifer stands may have survived past wildfires, burning at low to moderate severity, they remain vulnerable to future high-severity fires, especially in areas where they neighbor high-severity burn patches or areas with high fuel loading. These surviving green stands serve as vital local seed sources for natural regeneration. Additionally, they contribute to species and structural diversity and heterogeneity in a burned landscape. They represent mid to late seral forests in a landscape severely lacking such stand types.

Special landscapes with unique ecological or social attributes, such as high biodiversity and natural resiliency or scenic grandeur and cultural significance remain at risk from future wildfires. Maintaining heterogeneity through strategic reforestation and fuel treatment can help align forest conditions with historic fire regimes and reduce landscape-scale fire vulnerability, consistent with adaptation strategies supported by broader reconstructions of variable historical forest conditions across the western U.S. (Hessburg et al. 2021, Comment to Baker...).

Regional climate change trends indicate increasing mean temperatures and more variable precipitation. These changes will increase the impact of environmental stressors such as drought, insect infestations, and disease outbreaks on forest stands. We can also expect longer fire seasons with larger, more frequent fires. There is a need to provide the forest an opportunity to withstand these climate stressors and become more resilient to extreme climatic events. Climate adaptations will support forest and watershed health. Reforestation will maximize carbon sequestration over the next 80 years and allow for a natural forest carbon cycle. After catastrophic fire, slopes are susceptible to erosion for three to five years. Reforestation will stabilize slopes and establish healthy soil structure with a supportive nutrient cycle.

Desired conditions

- Forest structure and function are aligned with present and future climate conditions (e.g., predicted climate exposure and water stress).
- Forests are resilient to the broad array of interacting stresses and evolving disturbance regimes and insect, disease, and drought-related tree mortality.
- Replanted forest stands can persist over long timeframes and replanted areas promote individual tree growth and stand-level resilience to future changes in climate and climate-related disturbances like wildfire and drought.

- Replanted forest stands are capable of sequestering carbon over the long-term.
- Stand density reflects those found under historic fire regimes of frequent, mostly low to mixed severity fire.
- High levels of horizontal and vertical diversity exist at the landscape-scale. (SNFPA ROD p. 41)
- Species composition varies by elevation, site productivity, and related environmental factors. (SNFPA ROD p. 41)
- Shade-intolerant pines (sugar and Ponderosa) and hardwoods are promoted (SNFPA ROD p. 52), including culturally important species such as oak and maple.
- Forest species composition and structure is restored following large-scale, stand-replacing disturbance events. (SNFPA ROD p. 31)
- Burned forest landscapes are restored to appropriate forest cover with species of trees, degree of stocking, rate of growth, and conditions of stands designed to secure the maximum benefits of multiple use sustained yield management. (NFMA 1976)
- Reduced stand density levels minimizing water and nutrient competition support a climate resilient landscape.

2.2: Control non-native invasive species and re-establish native plant species

Non-native invasive plant species infestations remain uncontrolled inside the Dixie Fire footprint. Disturbances caused by fire, fire suppression, and recovery activities can increase the presence of noxious and invasive species. More than a century of fire exclusion and suppression in western North American forests has led to uncharacteristically dense, fire-prone conditions that exacerbate invasive species spread following disturbance events such as high-severity wildfire. Active management techniques are especially important in post-fire recovery contexts to reduce future disturbance severity, limit opportunities for invasive species establishment, and promote native plant regeneration (Hagmann et al. 2021). These species impact the aesthetic qualities of natural areas and may spread into adjacent lands if not controlled. Some areas which are highly disturbed or infested with non-native invasive plants may require re-establishment of native plant species.

Desired conditions

- Native species and ecosystems are protected from the introduction, establishment, and spread of invasive plant species through proactive land management that includes prevention measures, early detection, and rapid response actions. (FSM 2902)
- Native plant species are reestablished to restore biodiversity and prevent or reduce the likelihood of the reoccurrence or spread of invasive species in highly disturbed areas and/or following invasive species treatments.

- National Forest System lands are self-sustaining and resistant to the establishment of invasive species. (FSM 2902)
- Plants traditionally used by indigenous peoples are maintained or made increasingly available where appropriate when implementing noxious weed management programs. (SNFPA ROD p. 26)

2.3: Restore the landscape around recreational features to improve forest and watershed resources

Damaged and degraded trail corridors within the project area are causing erosion. Hazard trees along trails threaten visitor safety and can reduce the visual experience for many years. Post-fire brush growth requires regular maintenance along trails and impacts the ability to keep trails open. Hazard tree removal and silvicultural treatments can assist with long term trail sustainability where feasible. There is a need to improve trail function, location, sustainability, interpretation, and safety. Hazard tree removal, thinning, and proper stand maintenance including targeted reforestation surrounding recreational areas is required to ensure public safety, improve trail user experience, and protect forest and watershed resources.

A robust, sustainable trail network would protect watershed and forest resources, improve the interpretation and protection of cultural resources, and provide economic opportunities through tourism and local use.

Desired conditions

- Trail locations protect forest, watershed, and cultural resources and minimize resource impacts.
- Landscapes surrounding campgrounds and day use areas, and along Forest Service system trails are clear of hazard trees and a stand structure is maintained that is conducive of low severity fire to protect users and resources.

2.4: Improve and maintain NFS roads to protect and restore watershed health

Wildfires significantly impacted watersheds by burning vegetation and exposing bare soil. Increased runoff and erosion are still damaging roads and causing water quality issues. These issues are apparent across the forest landscape and manifest as fully or partially failed stream crossings, rills/gullies, blocked culverts, overtopped stream crossings, slumps, and landslides. Although some areas have already been identified and issues resolved under Burned Area Emergency Rehabilitation (BAER) or other post-fire activities, most were not assessed nor eligible for BAER treatments. There is a need to restore and maintain existing NFS roads within the project area to protect and restore watershed health.

Desired conditions

- Transportation systems are sustainable and reasonably safe.
- Road activities maintain, restore, or enhance water quality and habitat for riparian and aquatic species.
- Stream crossings meet or exceed the 100-year flood standard for bedload and debris flows.
- Roads avoid wetlands and meadows and minimize effects to natural wetland flow patterns.
- Road surfaces are restored and protected to resist deformation and damage to drainage structures. Additional drainage features support longevity of the road and improve water quality.

2.5: Restore and protect habitat for wildlife and plant species

The forests and meadows within the project area are home to various sensitive and listed wildlife and plant species.

Wildlife species within the project area include the California spotted owl (CSO), American goshawk (AGOS), and black-backed woodpecker (BBWO). Populations of California spotted owls have declined throughout their range in the Sierra Nevada due to threats such as climate change, fire suppression, large, high-severity wildfires, barred owl range expansion, and historic large tree removal (USDA FS 2019).

Thirty-four percent of all CSO Protected Activity Centers (PACs) within the Plumas National Forest were within the Dixie Fire footprint (USDA FS 2022b). With habitat loss following the Dixie Fire, the remaining CSO Home Range Core Areas (HRCA) and CSO and AGOS PACs will require management actions to increase viability and reduce the risk of loss in future high-severity fire events.

There is a long-term need to increase habitat resilience across the landscape while retaining specific habitat components for old forest-associated species, including large trees, structural diversity and complexity, and moderate to high canopy cover. Immediate action to reduce fuels left by the Dixie Fire will serve to reduce the short-term risk of another high-severity fire and create long-term landscape resiliency.

Frequent fire, characteristic of dry mixed-conifer forest, shaped the complex habitat requirements of Sierran forest-dependent species. After over a century of fire suppression, many suitable CSO nesting habitat has been left with excessive surface and ladder fuels and undesirable stand compositions. The CSO and the black-backed woodpecker utilize recently burned areas and patch-mosaic burned habitat, increasing the need to retain a sustainable

fire interval after initial treatments. Current data at the range wide, California, and Sierra Nevada scales indicate that the distribution of black-backed woodpecker populations in the Sierra Nevada is stable (USDA Forest Service 2008).

The project area contains known populations of gray wolves, and historically occupied suitable habitat for Pacific fisher and Sierra marten. Two known gray wolf packs have home ranges that extend into the project area. Gray wolves utilize a large variety of habitat types and have vast home ranges that vary depending on pack needs and growth. Although marten have not been detected within the analysis area in many decades, recent observations of fisher indicate individuals may be dispersing into the analysis area from nearby extant populations.

The project area encompasses a large band of serpentine bedrock, which supports a unique and diverse plant community. Populations of rare and serpentine endemic species are highly concentrated, and often limited to these ultramafic soils. Serpentine substrates burned at high to moderate severity result in direct and indirect impacts to rare plant species. High severity fire in these systems can increase the risk of future high severity fire.

Forty-one rare plant species are found within the project area, including several lady slipper orchid species such as the clustered lady's slipper, California lady's slipper, and mountain lady's slipper. Populations of lady's slipper orchids in areas that experienced high soil burn severity (SBS) in the Dixie fire have been largely extirpated. In areas with moderate to low intensity SBS, the populations have been reduced to approximately 50% or lower.

Other important rare plant species include Webber's milkvetch, Feather River stonecrop, and Follett's monardella. These species have diverse habitat requirements, ranging from exposed rocky outcrops to damp conifer understories. Canopy cover loss due to high-severity wildfires has reduced suitable habitat for some of these species, while others are threatened by regrowth of brushy fuels and invasive species. Protecting the remaining habitat from future wildfires and disturbance is critical to sustaining the remaining populations.

Climate adaptation measures are necessary to protect habitat for wildlife and plants in the face of climate events such as extreme fire, longer droughts, and warming temperatures. This includes providing conditions for mixed conifer forests to adapt to future climate stressors and reducing the risk of climate driven fire events.

Desired conditions

- Viable populations of all native and desired nonnative wildlife, fish, and plant species are maintained in habitats distributed throughout their geographic range on NFS lands. (FSM 2670.2)

- Biodiversity is restored to burned forest landscapes.
- Quality habitat for special status plant and wildlife species such as lady slipper orchids and the California spotted owl is restored and maintained; populations of rare and serpentine endemic species are maintained and promoted.
- High-quality habitat is retained in botanical Special Interest Areas and Research Natural Areas, including those negatively affected by wildfire.
- Fire resiliency is established and maintained throughout the landscape.

2.6: Improve meadows and streams to protect and restore watershed health

Meadows and streams have important ecological, social, and cultural value. Post wildfire conditions, as well as existing and abandoned roads, skid trails, and historic ditches have disturbed or diverted channels throughout the project area; this has caused some channels to abruptly stop, change direction or lose connectivity with the channel network. Most stream channels are in fair condition. However, there are known meadows and streams that have active headcuts and gullies, unstable or eroding stream channels and other areas of watershed concern that have already been identified within the project area watersheds. There is a need for action to protect and restore meadows and overall watershed health.

Desired conditions

- Spatial and temporal connectivity for riparian and aquatic-dependent species within and between watersheds provides physically, chemically and biologically unobstructed movement for their survival, migration and reproduction. (SNFPA ROD p. 43)
- The connections of floodplains, channels, and water tables distribute flood flows and sustain diverse habitats. (SNFPA ROD p. 43)
- Species composition and structural diversity of plant and animal communities in riparian areas, wetlands, and meadows provide desired habitat conditions and ecological functions. (SNFPA ROD p. 43)
- The distribution and health of biotic communities in special aquatic habitats (such as springs, seeps, vernal pools, fens, bogs, and marshes) perpetuates their unique functions and biological diversity. (SNFPA ROD p. 43)
- Meadows are hydrologically functional. Sites of accelerated erosion, such as gullies and head-cuts are stabilized or recovering. Vegetation roots occur throughout the available soil profile.
- Functioning watersheds can absorb large pulses of water from heavy rain and rapid snowmelt while also weathering the effects of intense droughts, all of which will become more common with a changing climate.

- Meadows with perennial and intermittent streams have the following characteristics: (1) stream energy from high flows is dissipated, reducing erosion and improving water quality, (2) streams filter sediment and capture bedload, aiding floodplain development, (3) meadow conditions enhance flood water retention and groundwater recharge, and (4) root masses stabilize stream banks against cutting action. (SNFPA ROD p. 43)

Public Involvement and Tribal Consultation

During the development of the North Fork Forest Recovery Project, the Plumas National Forest consulted and engaged with individuals, organizations, agencies, and Tribes. Individuals engaged included community members and residents of the primary communities that fall within the project area, including but not limited to residents of Taylorsville, Greenville, Genesee, Crescent Mills, Seneca, Indian Falls, Twain, Belden, Paxton, and Canyon Dam. The Forest Service also consulted all Mining Claimants within and adjacent to the project area.

Scoping letters were sent to organizations and entities including, but not limited to: the Alcacal Audubon Society, American Forests, American Forest Resource Council, Back Country Horsemen of California, Berry Creek Fire Safe Council, California Cattlemen's Association, California Fire Safe Councils Sierra Region, California Forestry Association, California Invasive Plant Council, California Native Plant Society, California State University Chico, California Wilderness Coalition, Center for Biological Diversity, Collins Pine Company, Concow Maidu Tribe of Mooretown Rancheria, Estom Yumeka Tribe of Enterprise Rancheria, Feather River Action, Feather River Land Trust, Feather River Resource Conservation District, Feather River Trout Unlimited, Forbestown Ridge Fire Safe Council, Friends of Plumas Wilderness, La Porte Snowmobile Club, Lassen Forest Preservation Group, Yahi Group Sierra Club, Butte Environmental Council, Mechoopda Indian Tribe of Chico Rancheria, Mule Deer Foundation, National Wild Turkey Federation, Northern California Botanists, Point Blue Conservation Science, Pacific Crest Trail Association, Pacific Gas and Electric Company (PG&E), Plumas Eureka Community Services District, Plumas Fire Safe Counsel, Sacramento River Watershed Program, Sierra Club, Sierra Pacific Industries, Southern Pacific Rail Road, The John Muir Project, The Wilderness Society, Trinity River Lumber, Tyme Maidu Tribe of Berry Creek Rancheria, University of California Cooperative Extension, University of California Davis, Washoe Tribe of Nevada and California, Winter Wildlands Alliance, and Ya-Mani Maidu Cultural Association.

Formal Tribal consultation letters also went to Tribes and Tribal entities including, Greenville Rancheria, Tasmam Koyom Foundation, Maidu Cultural Development Group, Susanville Indian Rancheria, Konkow Valley Band of Maidu, and Maidu Summit Consortium.

Government entities informed about the project included, but were not limited to, Plumas County Board of Supervisors, Berry Creek Community Services District, California Department of Fish and Wildlife, California Department of Forestry and Fire, California Wildlife Conservation Board, Central Valley Water Quality Control Board, Plumas County Planning, and Sierra Nevada Conservancy.

Scoping of the North Fork Forest Recovery Project took place between October 5th, 2023 and November 6th, 2023.

Beyond formal consultation, the Plumas National Forest and Sierra Institute also conducted informal outreach, including four community meetings, one Tribal outreach meeting, and one field tour for the North Fork Forest Recovery Project. The first three community meetings were hosted on June 21st (focused on Taylorsville, North Arm, and Genesee communities), July 13th (focused on Greenville and Crescent Mills), and July 19th (focused on Indian Falls, Seneca, Belden, Twain, Paxton, and Canyon Dam). The Tribal outreach meeting was held on July 11th. A field tour took place on October 17th and a public scoping meeting on October 19th.

Beyond community meetings and engagement opportunities, Plumas National Forest and Sierra Institute staff had numerous conversations and meetings with community stakeholders and organizations. Meetings to get input on the project occurred with Greenville Rancheria, Susanville Indian Rancheria, the Dixie Fire Collaborative, Sierra Buttes Trail Stewardship, the Seneca Firewise Committee, the Taylorsville Firewise Committee, Friends of Plumas Wilderness, and others. Public discourse around wildfire policy has become increasingly polarized, in part due to the spread of misinformation about fire ecology and forest management. This dynamic highlights the need for transparent communication, inclusive engagement, and strong reliance on peer-reviewed science (Jones et al. 2022).

Given community input provided during public scoping and through informal discussions, the EA now includes changes such as targeted grazing for fuels reduction, expanded fire management features, the adjustment of proposed trail systems, and further clarifications in the document about the conditions that would trigger certain proposed actions.

Draft EA Comment Period

On August 9, 2024, the Plumas National Forest initiated the 30-day comment period on the Draft EA with the publication of the opportunity to comment in *The Mountain Messenger*.

Additional notice was shared in the *Plumas Sun* and on PNF's social media. The Forest received comments from 26 individuals, groups, and agencies.

Appendix H: Response to Comments provides a response to many of these comments, including how they were addressed in the Final EA.

Objection Period

On November 8, 2024, the Plumas National Forest initiated the pre-decisional objection period for the project. This began the 45-day objection window, in accordance with 36 CFR 218, Subparts A and B.

During this period, the Forest received 10 eligible objections from individuals, organizations, and agencies. These objections were reviewed by the reviewing officer, and an Objection Review meeting took place with objectors on May 2nd, 2025. A written response was issued to objectors following the meeting.

The objections raised concerns related to project alternatives, cumulative effects, public safety, wildlife habitat, trail use, herbicide application, and forest plan consistency. The Forest reviewed and responded to each issue, and in several cases, additional clarification or minor updates were made to the Final EA and supporting documentation in response.

Emergency Authorization to Expedite Implementation

Under Forest Service NEPA regulations (36 CFR 220.4(b)(2)), the Chief or Associate Chief can authorize emergency actions when it's determined that they must be implemented before completing the standard NEPA analysis and documentation associated with a Categorical Exclusion or Environmental Assessment (EA) and Finding of No Significant Impact (FONSI). This process is distinct from alternative arrangements defined by the Council on Environmental Quality (40 CFR 1506.11).

An emergency response has been authorized (September 2024) for specific actions within the North Fork Forest Recovery Project due to significant risks to human health, safety, and natural resources that require immediate attention. Delaying action until the standard NEPA process is completed would pose undue risks to the communities of Greenville and Taylorsville.

In Greenville, CA, post-fire fuels reduction and site preparation for reforestation will take place on approximately 400 acres of land that experienced high-severity burns during the Dixie Fire. These treatment areas are adjacent to residences that survived the fire. The emergency

actions include: 1. Removal of burned trees using manual and mechanical methods to mitigate fuels and hazards. 2. Reduction of competitive vegetation through mechanical and chemical treatments to support naturally regenerating conifer seedlings. If these actions are delayed, the burned trees will continue to deteriorate, creating unsafe working conditions for operators. The naturally regenerating conifers also face increased competition from rapidly reoccupying brush and heightened fire risk as standing dead trees begin to fall. Without timely removal of dead trees and competitive vegetation, these seedlings risk being outcompeted. Additionally, future tree planting cannot proceed until the hazards from standing dead trees are addressed.

In Taylorsville, CA, forest thinning for fuels reduction and resilience will occur on approximately 300 acres in some of the last remaining green forest areas within the North Fork Forest Recovery Project planning area. While Taylorsville was spared from the severe damage of the Dixie Fire, the surrounding forest is at significant risk of wildfire.

In compliance with 36 CFR 220.4(b)(2), these actions are not expected to have significant adverse environmental impacts (40 CFR 1501.3(b)), as outlined in the Draft EA (August 2024). The interdisciplinary team developed the proposed action with design features aimed at avoiding or minimizing potential adverse effects, ensuring that impacts remain below significant thresholds. These features include limited operating periods, equipment exclusion zones, and standard protection measures for cultural and historic resources.

Future emergency authorities may still be pursued in the North Fork Forest Recovery Project area, such as under the Western Firesheds Emergency Action Decision.

2: Proposed Action

This section describes the Proposed Action for the North Fork Forest Recovery Project, including treatment types, treatment focus areas, project-specific Forest Plan amendments, and design features.

- **Treatment types** describe proposed land management activities.
- **Treatment focus areas** describe where activities will take place on a landscape-scale.
- **Project-specific Forest Plan amendments** refer to proposed changes to the PNF Land and Resource Management Plan (LRMP), as amended by the Sierra Nevada Forest Plan Amendment (SNFPA) that would apply to the Proposed Action.
- **Design features** are measures to minimize or avoid adverse effects.

A No Action Alternative is addressed under 3: Environmental Impacts. Under the No Action Alternative, the Forest Service would not implement the Proposed Action, and the current PNF LRMP, as amended, would continue to guide management within the project area. Fuels would continue to accumulate, stand densities would gradually increase, and no efforts to assist post-fire recovery would occur. Ongoing authorized activities and current management strategies would continue.

Treatment Types

The Proposed Action includes a suite of treatments to meet the Purpose and Need. Each treatment is designed to address one or more aspects of the Purpose and Need and may be used as a stand-alone treatment, in combination with another treatment, or following another treatment. Some treatments may be required multiple times for long-term maintenance and efficacy.

Treatments are organized into ten treatment types based on their function and role on the landscape:

- Prescribed fire,
- Variable-density thinning,
- Fuels reduction,
- Hazard tree removal,
- Reforestation,
- Invasive species management,
- Stream and meadow restoration,
- Transportation system maintenance and improvements,
- Herbicide treatments for reforestation and invasive species management, and

- Recreation.

Treatment types may include multiple methods as described in Appendix C: Treatment Methods.

Prescribed Fire

Prescribed fire is a versatile tool that can meet multiple project needs, including restoring, improving, and maintaining forest resource conditions and reducing wildfire threats around communities and infrastructure.

Prescribed fire treatment methods proposed in this project include broadcast burning, understory burning, jackpot burning, and pile burning. By imitating the natural ecological role of fire, prescribed fire reduces hazardous surface and ladder fuel accumulation and encourages fire-adapted species. Prescribed fires are expected to burn slower and with less intensity than a wildfire under extreme weather conditions, providing improved wildfire suppression opportunities and reducing the likelihood of high-severity fire at the landscape scale.

PNF fire managers and crews would be responsible for preparing burn plans, establishing fire control lines, coordinating with regulatory agencies, and conducting burning operations. These treatments would only be conducted when conditions meet those in the approved Prescribed Fire Plan, PMS 484-1, as described in the Interagency Prescribed Fire Planning and Implementation Procedures Guide, PMS 484. Treatments must also comply with State and federal air quality standards and follow basic smoke management practices to mitigate human health and safety impact through proper smoke management and monitoring.

Prescribed fire treatments include all the necessary steps to prepare and implement a burn, including fire control line construction, ignition, and mop-up, and may be applied as a stand-alone treatment or as a follow-up to another treatment such as variable-density thinning (described below).

Variable-Density Thinning

Variable-density thinning (VDT) is an uneven-aged thinning technique designed to create structural heterogeneity, promote the development of diverse tree species, and enhance overall stand resilience to severe disturbances. Through individual tree removal, VDT restores openings or gaps in the forest canopy, retains and promotes clumps of trees, and restores a variable-density “matrix” condition to the landscape. Cut trees may be removed as a product.

Openings or gaps are areas between 0.1 to 3 acres where forest managers remove conifers with a diameter at breast height (DBH) less than 30 inches.¹ Clumps are dense pockets of trees where thinning is typically avoided to produce a multi-tiered canopy with interlocking crowns. The area between gaps and clumps is the matrix.

Matrix conditions would be designed to reflect the natural range of variation (NRV), which encourages fire-resilient tree species, large-diameter trees, and more open forest conditions. Spacing between trees would vary within the stand to mimic historic conditions and promote conditions favorable to low-severity wildfires. VDT promotes heterogeneity within stands and across the landscape by increasing vertical and horizontal diversity, thereby providing a variety of wildlife habitat elements. Density targets would consider topographic position.

VDT would increase the resiliency of stands to wildfire by breaking up the canopy and reducing fuels. Furthermore, VDT would be used as needed to prepare stands for the reintroduction of fire, promote tree species composition and stand density comparable with NRV, and accelerate the growth of mid-seral forests toward late seral conditions (particularly in previously planted stands). Target tree densities and species will vary across the landscape based on factors such as slope and aspect.

VDT can be achieved through either hand or mechanical thinning methods. In this landscape-scale project, most stands would be thinned mechanically, but hand thinning would be employed to protect sensitive areas such as protected wildlife habitats or riparian areas and avoid soil disturbance on steep slopes. VDT may be implemented as a stand-alone treatment or in conjunction with fuels reduction and prescribed fire treatments.

By shifting forest conditions toward NRV and reducing wildfire risk, VDT supports both overarching purposes of this project: forest and watershed health and resilience, and community protection and strategic fire management.

Tables 2 and 3 on the next page summarize hand and mechanical thinning acres within the project area within “green forest” (generally low severity burned areas or unburned areas) and “black forest” (generally high severity burned areas).

¹ Trees up to 40” dbh may be removed on an incidental basis. See Appendix B for more information.

Table 2: Summary of Green Forest Thinning Treatment Acres

Thinning Treatment Type	Acres
Hand thin	33,584
Mechanical thin: target rSDI 25%-35%	33,376
Mechanical thin: retain 40% canopy cover	4,140
Mechanical thin: retain 50% canopy cover	11,976
Mechanical thin: retain 60% canopy cover	2,651
Total	85,727

Table 3: Summary of Black Forest Treatment Acres

Thinning Treatment Type	Acres
Hand thin	24,360
Mechanical thin	56,802
Total	81,162

Borate Stump Treatment

This project proposes borate stump treatments following variable-density thinning activities to prevent the spread of *Heterobasidion* root disease (HRD).² HRD is one of the most important conifer diseases in California. It is caused by several fungal pathogens in the genus *Heterobasidion* (e.g., *H. irregulare* and *H. occidentale*), which infect trees through wounds or root contact with infected stumps or soil. HRD is widespread throughout conifer forests in the region, and fungal spores spread through the air can colonize cut stumps and spread underground to infect live trees. HRD poses a significant threat to conifers, and its control is crucial for maintaining forest health, especially considering other major disturbances like wildfires, bark beetles, and drought (Flores et al. 2023).

Most new HRD stump infections can be prevented by treating freshly cut conifer stumps with a borate pesticide. Studies have shown that borate stump treatments can achieve at least 90% efficacy in preventing new HRD infections (Poloni et al. 2021). Treating stumps is not always necessary, and borate stump treatment priorities developed by USDA Forest Service Region 5 are outlined in Appendix C: Treatment Methods.

Fuels Reduction

The goal of fuels reduction treatments is to remove dangerous or excessive fuels from the environment to reduce wildfire threats around communities and reduce anticipated wildfire severity in unpopulated areas to create a more resilient forest.

² Borate stump treatments may also follow hazard tree removal.

Fuels reduction treatment methods include hand and mechanical thinning (see Variable-Density Thinning), hand and machine piling, mastication, chipping, and targeted grazing. Where feasible, biomass would be removed from site. Fuels reduction may occur as a stand-alone treatment or accompany variable-density thinning and prescribed fire.

Hazard Tree Removal

“Hazard trees” are those trees that have a risk of falling, in whole or in part, and injuring people or damaging property. Removing hazard trees within the project area will improve public safety and facilitate forest restoration and fire management by providing safe conditions for forest workers.

Hazard tree removal involves identifying, felling, and removing hazard trees capable of striking Forest Service system roads and trails, and structures; and removing felled trees from past fire suppression or rehabilitation activities along high-use roads (operational maintenance level 2, 3, 4, and 5 NFS roads and county roads), within and adjacent to developed facilities on NFS lands; felling certain trees along NFS trails that pose a safety risk NFS land; and along private property boundaries where dead and dying trees present a threat to life or property. Where the transportation of material off-site is infeasible or impractical, hazard tree removal may also involve felling only, on-site chipping, hand or mechanical piling, and pile burning.

Hazard trees would be identified, felled, and removed in accordance with the Region 5 Hazard Tree Guidelines (USDA 2022d). Borate stump treatments (described earlier under variable-density thinning) may accompany hazard tree removal to prevent the spread of HRD.

Reforestation

Strategic reforestation may occur throughout the project area where needed to meet desired conditions. Reforestation would be targeted at restoring conifer forests within large, high-severity burn patches with a low probability of natural regeneration, as well as within smaller, high-severity patches near communities, recreational assets, and infrastructure where re-establishment of forest is important for community safety and well-being (see Wildlife-Urban Intermix). Reforestation activities would consider future climate scenarios and employ diverse tree planting, site preparation, and maintenance strategies to restore a resilient landscape. Site-specific resource evaluation will occur to refine and prioritize reforestation treatments as part of the implementation plan process, as well as to identify areas where reforestation is not necessary due to natural regeneration, operability constraints, or resource impacts. In response to public input and site-specific resource evaluation, a reforestation and mechanical treatment exclusion zone has been identified on the south side of Genesee Valley (Appendix

A-12). This exclusion zone will also exclude herbicide utilization as described below. Regional policy directs projects to use an integrated approach that identifies appropriate methods of treatment to ensure successful reforestation efforts with the intended goal of forest stand establishment and long-term development. Reforestation efforts in burned areas will support the State of California's and the Federal government's goals of reducing carbon in the atmosphere as trees regrow and sequestering carbon from the atmosphere.

Site preparation and maintenance may include the removal of burned trees, brush, and vegetation using manual, mechanical, or chemical treatments. Where appropriate, selective herbicide application may be used during site preparation and for maintenance/release to reduce competing vegetation and promote conifer success (see Herbicide).

Invasive Species Management

Invasive species management treatments are intended to control identified non-native invasive plant species that pose a threat to healthy forests and watersheds. Employing an integrated pest management approach, treatments would incorporate various manual, mechanical, and chemical (herbicide) control methods and native plant re-establishment where warranted. Treatments are developed based on the target species' biology, environmental settings, potential impacts on other resources, and the size and density of infestations.

Best management practices would be included in the design and implementation of other treatments to minimize the potential introduction and spread of non-native invasive species. Treatment options allow for the treatment of known infestations and existing but undocumented infestations.

Table 4 describes priority non-native invasive plant species within the project area. Proposed herbicide treatment and application rates are outlined in Appendix E: Herbicides.

Table 4: Priority non-native invasive plant species

Scientific Name	Common Name	Form	Rank (CAL-IPC)
<i>Aegilops triuncialis</i>	Barbed goatgrass	Annual Grass	High
<i>Ailanthus altissima</i>	Tree of heaven	Tree	Moderate
<i>Bromus tectorum</i>	Cheatgrass	Annual Grass	High
<i>Centaurea solstitialis</i>	Yellow starthistle	Perennial Herb	High
<i>Centaurea stoebe ssp. micranthos</i>	Spotted knapweed	Perennial Herb	Moderate
<i>Chondrilla juncea</i>	Skeleton weed	Perennial Herb	Low
<i>Cirsium arvense</i>	Canada thistle	Perennial Herb	High
<i>Cytisus scoparius</i>	Scotch broom	Shrub	Moderate
<i>Dittrichia graveolens</i>	Stinkwort	Annual herb	Moderate
<i>Elymus caput-medusae</i>	Medusahead	Annual Grass	Moderate
<i>Genista monspessulana</i>	French broom	Shrub	High

Scientific Name	Common Name	Form	Rank (CAL-IPC)
<i>Isatis tinctoria</i>	Dyer's woad	Annual Herb	Moderate
<i>Lepidium latifolium</i>	Pepperweed	Perennial Herb	High
<i>Linaria dalmatica</i>	Dalmatian toadflax	Perennial Herb	Low
<i>Lythrum salicaria</i>	Purple loosestrife	Perennial Herb	High
<i>Onopordum acanthium</i>	Scotch thistle	Annual Herb	High
<i>Potentilla recta</i>	Sulfur cinquefoil	Perennial Herb	Low
<i>Rubus armeniacus</i>	Himalayan blackberry	Shrub	High
<i>Spartium junceum</i>	Spanish broom	Shrub	High

Stream and Meadow Improvements

Stream and meadow improvements may consist of instream structures, riffle augmentation, channel fill, bank armoring borrowing, hillslope contouring, grade control structures, and vegetation treatments such as willow propagation or conifer removal. Design would focus on utilizing environmental engineering techniques such as erosion cloth blankets and mulching on disturbed soils. Project re-vegetation will utilize existing plant material and a native seed mix, recommended by a PNF Botanist. Vegetation harvested from the project area will be stockpiled and reused to plant in repaired channel bottoms and on areas where slope stabilization has occurred. A treatment to lay back the slope of vertical, eroding streambanks to an angle that would facilitate establishment of riparian vegetation could be used in several areas. Rock vane structures might be installed within the stream channel along these banks to move water in high flow events away from the recovering stream bank and to improve pool habitat. Willow cuttings would be planted in the banks to provide root stabilization. Material excavated from the laid-back stream banks could be used to fill small tributary headcuts near the channel. These actions will help restore the natural hydrological and biological functions of meadows and channel systems.

Temporary fencing may be required to protect project structures and revegetation. Temporary fencing on other projects of the Mt. Hough Ranger District have successfully used electric polywire structures designed to be easily and quickly installed and maintained. Typical temporary fencing timelines run from three to five years, or until vegetation is established to the point of being resilient to grazing.

Transportation System Maintenance and Improvement

National Forest System (NFS) roads, or "system roads," are inventoried, maintained, and managed by the Forest Service and are necessary for the protection, administration, and use of National Forests. Maintenance, re-construction, or realignment may be necessary along the existing NFS road system to ensure the Proposed Action can be implemented smoothly and effectively. Roads may need short realignment to accommodate chip vans for biomass removal, or short segments that should be routed away from wet meadows or streams. For

example, there is a 0.4-mile section of road 26N20 in Long Valley that needs to be realigned away from a stream that frequently flows on the present road location. During project planning, 34 road locations were preliminarily identified for water quality improvements; treatments identified include culvert cleaning, road resurfacing, road drainage feature installation, and replacing undersized culverts. Additional road work may occur, as needed, to address any newly discovered deficiencies.

Proposed treatments related to transportation include road maintenance and improvements necessary for project implementation, temporary road construction, realignment and route obliteration of temporary roads and unauthorized routes such as user-created trails. These actions would facilitate the implementation of other treatments and improve watershed health.

Herbicide

Herbicide treatments are proposed as part of an integrated pest management approach for invasive species management and to improve seedling survival in reforestation treatment units. Herbicide would be applied using a backpack sprayer or hand-operated spray bottles. No aerial herbicide application is proposed. Herbicides would be applied in accordance with product label directions, California Department of Pesticide Regulations requirements, U.S. Environmental Protection Agency requirements, and Forest Service best management practices for water quality. Proposed herbicide application methods, such as foliar application and spot spraying, are described in Appendix E: Herbicides.

Herbicide application would be constrained by numerous design features such as buffers from streams, sensitive and special interest plant species, private property boundaries, precipitation events, and other restrictions. The Forest would take measures to minimize human exposure, including the use of personal protective equipment, controlled access to treatment areas, and signage at public access points. Buffers to streams could be greater than the minimum dictated by law; they would be determined based on what is best for the site. Examples of site-specific factors that can influence buffer size are the species of amphibians that have suitable habitat in the area (some amphibians travel farther from water than others), soil type (some soil types are more mobile/well-drained than others), and recent severity of burn or other disturbance (burn severity affects soil mobility/infiltration). An herbicide exclusion zone has been identified in response to public input and site-specific resource evaluation on the south side of Genesee Valley (Appendix A-11). Herbicide exclusion zones may be created where appropriate throughout the project as part of the Implementation Guide (see Appendix G) process in response to specific resource considerations, public input, or feasibility constraints.

Table 5 outlines the proposed single-ingredient herbicides, uses, application rates, and application methods. Several tank mixtures are proposed in addition to single-ingredient applications (E- 4: Proposed Tank Mixtures).

Table 5: Proposed single-ingredient herbicides, uses, application rates and methods

Active Ingredient Measured as active ingredient (a.i.) or acid equivalent (a.e.)	Proposed Use*	Expected Application Rate Pounds a.i. or a.e. per acre	Maximum Application Rate Pounds a.i. or a.e. per acre	Application Method(s)
Aminopyralid (a.e.)	Invasives	0.078	0.11	Backpack directed foliar spray
Chlorsulfuron (a.i.)	Invasives	0.056	0.25	Backpack directed foliar spray
Glyphosate (a.e.), aquatic and non-aquatic formulations	Invasives Reforestation site prep and release	2.00	8.00	Backpack directed foliar spray Hack and squirt Cut-stump Wicking
Imazapyr (a.e.) oil soluble	Invasives	0.45	1.25	Backpack directed foliar spray Hack and squirt Cut-stump Stem injection Basal bark treatment
Indaziflam (a.i.)	Reforestation site prep	0.065	0.091	Backpack directed foliar spray
Triclopyr (a.e.) amine	Reforestation release	1.00	6.00	Backpack directed foliar spray Hack and squirt Cut-stump Basal bark treatment
Clopyralid (a.e.)	Invasives	0.35	0.5	Backpack directed foliar spray

*Future invasive species treatments could potentially use any herbicide analyzed within this project.

Application rate ranges are those analyzed in SERA risk assessments, which consider likely Forest Service application methods and label recommended rates. Surfactants and marker dyes may be added to any herbicide application unless limited by specific project design features.

Surfactants and marker dyes are adjuvants, compounds that improve the mixing, application, or effectiveness of an herbicide. Marker dyes are used to visually confirm the location of the herbicide application. This assists applicators in limiting application to target plants and reduces the risk of application to non-target organisms and areas. Surfactants enhance absorbing, spreading, sticking, and other properties of herbicides, allowing for the use of lower application rates (SERA 1997, USDA FS 2021b).

Additional details for herbicide use as a tool for invasive species management and reforestation can be found in Appendix E: Herbicides.

Recreation

Proposed recreation treatments include trail construction and maintenance and facility improvements. This project proposes trail construction and maintenance of approximately 32 miles of trails, including 7 miles of non-motorized trails, and 25 miles of motorized trails (open to Class 1 e-bikes only). Proposed trail length and location are approximate. Actual layout of trails to sustainable trail standards typically increases mileage, as adherence to Forest Service slope standards requires slightly longer routes to achieve moderate trail grades for elevation gains and losses. Trails would be designed to Forest Service Standard specifications for construction and maintenance of trails (EM-772-103) to withstand the wear and tear of normal traffic and reasonable user behavior during the managed season of use and to minimize negative effects on adjacent forest and watershed resources (FSH 2309.18).

Proposed facility improvements would include utilities (water, electrical), host sites, shower facilities, additional parking, improved, paved camping spurs, and upgraded restrooms. For example, Greenville Campground upgrades would elevate an underutilized recreation facility to a highly developed site to increase tourism and economic opportunity in the Indian Valley area. Vegetation treatments along trails and within and adjacent to campgrounds would focus on hazard tree removal and variable-density thinning to improve forest health and reduce wildfire risk. Campground redesign would result in minimal additional tree disturbance unless trees pose a hazard to users or project crews.

Treatment Focus Areas

Treatment focus areas share common desired conditions. Desired conditions are statements describing a common vision for each treatment focus area. These statements are made in the present tense indicating a condition that management will be designed to maintain or move toward in each treatment focus area. Management action is triggered when landscape conditions do not meet desired conditions. Because landscape conditions change over time, this condition-based approach allows land managers to apply appropriate treatments based on current site conditions during implementation.

Identified treatment focus area categories include:

- Wildland-urban intermix (WUI),
- Wildlife habitat,
- Cultural stewardship,
- Designated lands,
- Fire recovery,
- Fire management features, and

- Other areas.

These categories are subdivided into specific types, described with desired conditions in Appendix D: Treatment Focus Areas. Landscape-scale treatment focus area maps may be found in Appendix A: Project Maps. Smaller treatment units will be developed following the framework described in Appendix G: Implementation Guide. In response to public input and site-specific resource evaluation, a mechanical treatment and herbicide exclusion zone has been identified on the south side of Genesee Valley (Appendix A-12). Similar site-specific resource evaluation and solicitation of public input will occur throughout the life of the project as part of the Implementation Guide process described in Appendix G.

Not all treatment focus area categories or types are mutually exclusive. For example, wildland urban intermix may overlap with wildlife habitat. Direction for overlapping treatment focus areas with conflicting desired conditions is noted where appropriate. Where treatment focus areas overlap but desired conditions do not conflict, both apply.

Wildlife-Urban Intermix

Wildland-urban intermix (WUI) zones are transitional areas where developed land meets and mixes with undeveloped wildland. Flammable vegetation surrounds and intermingles with homes and other structures in the WUI. Treatments in the WUI are designed to protect communities from wildfire through appropriate thinning, fuels reduction, prescribed fire treatments, and selective reforestation. Proposed treatments in WUI zones are guided by the 2004 Sierra Nevada Forest Plan Amendment Record of Decision (SNFPA ROD).

Desired conditions for the WUI are described in Appendix D: Treatment Focus Areas. Hazard tree removal, fuels reduction, and reforestation treatments on FS lands adjacent to private property and within community viewsheds will be prioritized for public safety and well-being.

Table 6: WUI Treatment Focus Area acreage summary

WUI Status	Acres
Urban Core Area	87
Defense Zone	50,775
Threat Zone	85,249
Total WUI	136,111
Outside WUI	30,779
Total Project Area	166,889

Wildlife Habitat

The forests and meadows within the project area are home to various wildlife species with diverse habitat requirements, such as California spotted owl (CSO), American goshawk

(AGOS)³, and black-backed woodpecker (BBWO). Wildlife habitat treatment focus areas include CSO and AGOS protected activity centers (PACs), CSO territories, CSO home range core areas (HRCAs), CSO home range areas, snag retention areas, and meadow habitat.

The existing Forest Plan provides direction for managing California spotted owl and American (northern) goshawk PACs and California spotted owl HRCAs (see Appendix D: Treatment Focus Areas). This project has been designed to comply with existing Forest Plan direction as amended by the proposed project-specific Forest Plan amendments (Appendix B: Project-Specific Forest Plan Amendments and Substantive Requirements).

The 2019 California Spotted Owl Strategy, produced by the USDA Forest Service, provides recommendations based on updated science, and includes two areas of ecological significance beyond PACs: territories and home ranges. The Strategy describes territories as areas defended by a resident pair of owls from other owls of the same species. Owl territories on the PNF are 1,000-acre circular areas that include the associated nest stand and PAC. Home ranges include the associated nest stand, PAC, territory, and additional areas to meet owl life-history requirements. Home range sizes are highly variable (1,500 to 5,400 acres) depending on individual owl behavior and environmental conditions. There is often extensive overlap with other owls' home ranges. (USDA Forest Service 2019).

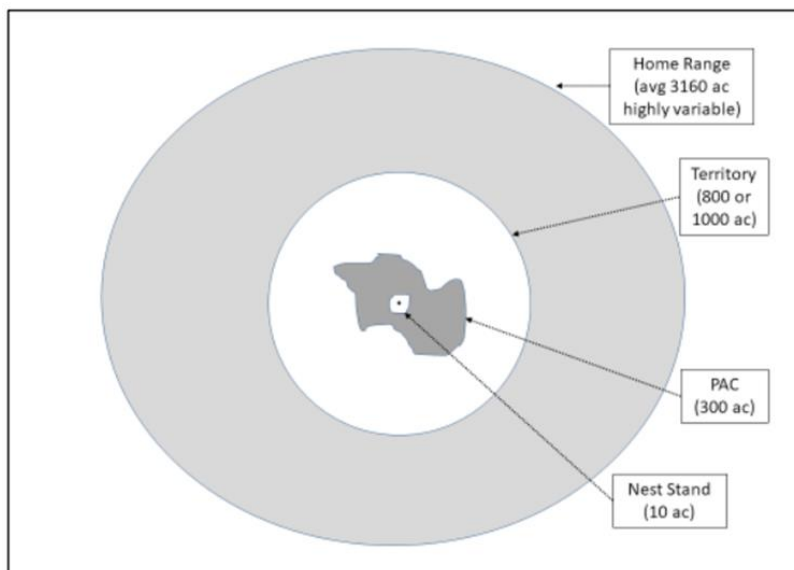


Figure 2: Conceptual model of spotted owl habitat ecological areas of significance (USDA Forest Service 2019)

Conservation measures within PACs, HRCAs, home ranges, and territories have been developed to promote and maintain well-distributed spotted owl habitat throughout the project area. These measures have been adopted through the design of the proposed Forest

³ Formerly “Northern Goshawk (NOGO)”.

Plan amendments (Appendix B: Project-Specific Forest Plan Amendments and Substantive Requirements) and design features (Appendix F: Design Features). Table 7 summarizes how the Strategy describes suitable owl habitat types using the California Wildlife Habitat Relationships (CWHR) classification system.

Table 7: Suitable Habitat for the CSO using the CWHR classification system⁴

CWHR Class	Tree size QMD	CWHR Canopy Class	Canopy Cover	Vegetation Types	CSO Habitat Use
4D	11" to 24"	Dense cover	60% to 100%	DFR, MHC, MHW, MRI, PPN, RFR, SMC, WFR	Foraging
4M	11" to 24"	Moderate cover	40% to 59%	DFR, MHC, MHW, MRI, PPN, RFR, SMC, WFR	Foraging
5D	>24"	Dense cover	60% to 100%	DFR, EPN, JPN, LPN, MHC, MHW, MRI, PPN, RFR, SMC, WFR	Nesting Nesting/roosting
5M	>24"	Moderate cover	40% to 59%	DFR, EPN, JPN, LPN, MHC, MHW, MRI, PPN, RFR, SMC, WFR	Nesting/roosting
6	Size class 5 trees over a distinct layer of size class 4 or 3 trees	Dense cover	60% to 100%	DFR, EPN, JPN, LPN, MHC, MHW, MRI, PPN, RFR, SMC, WFR	Nesting Nesting/roosting

Table 8: Wildlife Treatment Focus Area acreage summary

Habitat Type	Total Acres
CSO PAC	13,980
CSO Territory	37,566
CSO HRCA (outside PAC)	31,819
CSO Home Range	77,198
AGOS PAC	4,849
Meadows	133
Snag retention areas	10,330

Cultural Stewardship

Within the project footprint, select areas have been identified for cultural stewardship by local Tribes or Tribal entities. For example, a variety of stewardship activities are proposed for an area near Greenville, referred to as the Maidu Stewardship Project Area (MSPA). This area is nearly 1,500 acres with elevations ranging from 3,600 to 4,600 feet. The MSP is located north of Greenville in Indian Valley, the ancestral home of the indigenous Mountain Maidu people and home of the largest Native American population in Plumas County.

⁴ CWHR habitat types for CSO include Douglas fir (DFR), eastside pine (EPN), Jeffrey pine (JPN), lodgepole pine (LPN) montane hardwood-conifer (MHC), montane hardwood (MHW), montane riparian (MRI), ponderosa pine (PPN), red fir (RFR), Sierran mixed conifer (SMC), white fir (WFR).

The Maidu community began assessment work for the MSPA around 1970. A proposal developed by the Maidu Cultural and Development Group (MCDG) in 1997 consisted of two key elements: 1) collaborative communication protocols, and 2) demonstration of traditional ecological knowledge (TEK). This proposal was nominated as a pilot project by the PNF Forest Supervisor, through the Forest Service Pacific Southwest Regional Office (RO) and the Washington Office (WO) in September of 1997. Notice of selection as one of 22 pilot projects was sent from the WO to the MCDG in September of 1998.

Other locations beyond the MSPA will be identified as areas for cultural stewardship depending on cultural significance and feasibility. A map of the MSPA is provided in Appendix A: Project Maps.

Designated Lands

Several types of federally designated lands with special management protections fall within the project area, including a Research Natural Area (RNA), Inventoried Roadless Areas (IRAs), proposed botanical Special Interest Areas (SIAs), and eligible Wild and Scenic Rivers.

The project area contains the entirety of the 75-acre Wheeler Peak unit of the Mud Lake RNA, which was established to protect rare stands of Baker Cypress for research and education and to maintain biological diversity. Baker Cypress is an ancient, fire-adapted conifer species that persists under high-severity, infrequent fire regimes. The Wheeler Peak unit burned at mixed severity during the Dixie Fire, with approximately half the unit burning at high severity. The Baker cypress population will remain vulnerable to future fires until the stands reach cone maturity in 30 years. Proposed treatments within the RNA aim to reduce the risk of fire eliminating the immature population of Baker cypress at the Wheeler Peak Unit by further reducing snag density and fuel loading at this site. Implementation actions would include fuels treatments consisting of hand thinning, grapple piling, and pile burning. Treatment would focus on areas burned at high severity where few young seedlings are present.

The project area includes portions of the Chips Creek, Grizzly Peak, and Bucks Lake Inventoried Roadless Areas (IRAs). IRAs are designated NFS lands managed by regulations that limit or prohibit timber harvesting and road building to protect roadless area characteristics, such as natural appearing landscapes with high scenic quality or habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species dependent on large, undisturbed areas of land. Treatments within IRAs are limited to hand thinning and prescribed fire only. No mechanical thinning or road building (including trails) is proposed within designated IRAs.

Several proposed special interest areas (SIAs), including Red Hill, Fales Basin, and an expansion of the established Butterfly Valley Botanical Area are located within the project area. Treatments within proposed SIAs are designed to maintain the integrity and suitability of the areas for which they were proposed (e.g., to protect diverse existing populations of rare and endangered California native plants).

Although no designated Wild and Scenic River segments fall within the project area, there are 39 miles of eligible Wild and Scenic River segments within the project boundary. The current PNF management strategy is to protect and conserve these eligible segments as they are formally designated. The 1968 Wild and Scenic Rivers Act allows for the designation of free-flowing rivers with outstandingly remarkable values as "wild," "scenic," or "recreational," each reflecting different levels of accessibility and development. Wild rivers are generally inaccessible except by trail and have a largely undeveloped environment. Scenic rivers are more accessible than wild rivers but retain their natural condition. Recreational rivers are readily accessible by road or rail and may have some development but still offer significant natural and scenic values.

Following interim management guidelines, a quarter-mile corridor boundary will be established around each eligible segment, and vegetation treatments within these corridors will protect and conserve outstandingly remarkable values based on the proposed designation type. Within eligible Wild River corridors, the only proposed vegetation treatment will be prescribed fire. Hand thinning and prescribed fire will be used as appropriate within eligible Scenic corridors. Within eligible Recreational corridors, hand thinning, mechanical thinning, and prescribed fire will be used to achieve desired conditions. Additionally, design features WSR-01 through WSR-10 have been developed to mitigate impacts to eligible Wild and Scenic Rivers.

Table 9: Designated Lands Treatment Focus Area acreage summary

Land Designation	Acres
Research Natural Area	75
Inventoried Roadless Area	9,780
Special Interest Area – Established	33
Special Interest Area – Proposed	9,682
Eligible Wild and Scenic River Corridor	11,347
Total	30,917

Table 10: Eligible Wild and Scenic River segments within the project area

Eligible Wild and Scenic River	Type	Segment Miles
North Fork Feather River	Recreational	6.7

Eligible Wild and Scenic River	Type	Segment Miles
Chips Creek	Scenic	2.9
Indian Creek (near Belden)	Recreational	3.2
Squirrel Creek	Wild	1.8
Yellow Creek	Wild	7.8
East Branch North Fork Feather River	Recreational	11.6
Last Chance Creek	Wild	1.4
Indian Creek	Recreational	3.7
Total	All Types	39.1

Table 11: Summary of eligible Wild and Scenic River corridor acres

Eligible Wild and Scenic River Type	Corridor Acres
Recreational	7,849
Scenic	761
Wild	2,664
Scenic, Recreational (overlapping)	15
Wild, Recreational (overlapping)	57
Total ⁵	11,347

Fire Recovery

Ninety-four percent of the project area falls within the footprint of the 2021 Dixie Fire, with over one-third of the project area burning at high severity (USDA Forest Service 2022a). The primary objective within moderate to high-severity burned areas is post-fire recovery. Proposed treatments in these areas will follow the recommendations outlined in the Postfire Restoration Framework for National Forests in California (GTR-PSW-270) and utilize results from the Post-fire Restoration Opportunities for Conifer Forest in the 2021 Dixie and Sugar Fires assessment to inform decisions (USDA Forest Service 2022b). Fire recovery treatment focus areas are delineated by burn severity.

Burn severity is a qualitative measure of the degree vegetation has been altered or disrupted by fire. Burn severity is typically classified into three categories: low, moderate, and high. Various measures can be used to classify burn severity following wildfires, including basal area loss, canopy cover loss, and the composite burn index. Burn severity classification for this project uses percent basal area loss. Basal area is the total cross-sectional area of trees in each area, and percent basal area loss represents the change in the live basal area following a fire relative to the pre-fire condition. Post-fire basal area loss may be temporary or permanent. This measure is used in the North Fork Forest Recovery project because it is available across the entire landscape and provides insight into tree mortality that is useful for planning management actions. Data used comes from the Rapid Assessment of Vegetation Condition after Wildfire (RAVG) program, managed by the USDA Forest Service Geospatial Technology and Applications Center (GTAC). RAVG burn severity data are derived from satellite imagery and are publicly available.

Within the context of this project, fire recovery actions will focus on high to moderate severity burned patches. Because many low-severity burned areas resemble pre-fire conditions, they

⁵ Where corridors overlap, the more restrictive management direction takes precedence. For example, 57 acres of Yellow Creek's corridor (a Wild segment) overlaps with the North Fork Feather River's corridor (a Recreational segment). Vegetation treatments would follow direction for Wild segments (prescribed fire only).

are included under the general forest matrix category below. Burned areas within the WUI, adjacent to private property, and within community viewsheds will be prioritized for hazard tree removal and reforestation actions.

Table 12: 2021 Dixie Fire burn severity acreage within the project area

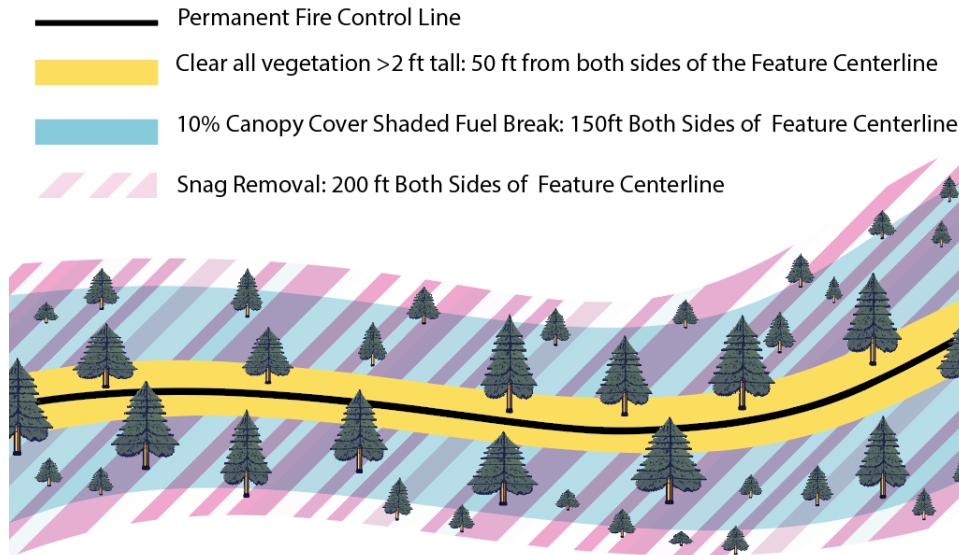
Burn Severity Class	% Basal Area Loss	Project Acres	% of Project Area
Low	0%-25%	64,363	38.57%
Moderate	25%-75%	22,622	13.56%
High	>75%	70,368	42.16%
Outside fire footprint	N/A	9,536	5.71%
Total		166,889	100%

Fire Management Features

Fire management features will help defend communities against wildfire and support strategic fire management objectives, including the safe reintroduction of fire to the landscape through prescribed fire. Fire management features include permanent fire control lines and ingress-egress routes.

Permanent fire control lines are built or natural features used to control the movement of wild and prescribed fire across the landscape. Built features include infrastructure such as roads, trails, fuel breaks, and dozer lines from past fire suppression efforts. Existing infrastructure and natural features such as rivers, ridges, and rock outcrops will be used wherever possible.

Fire Management Feature - Permanent Fire Control Line Prescription



*Live trees >30" dbh will be retained throughout the treatment unit in accordance with existing Forest Plan guidelines

Figure 3: Illustration of the proposed permanent fire control line prescription

Ingress-egress routes are roads that are likely to serve as evacuation routes for community members and provide access for fire suppression personnel. Vegetation treatments along ingress-egress routes are intended to keep roads accessible for both the public and fire suppression personnel. No new road construction is proposed. Proposed ingress-egress routes and segment miles are summarized in Table 13.

Table 13: Proposed ingress-egress routes

Road Name	Segment Miles
Antelope Rd	2.1
Beckwourth-Genesee Rd	1.5
Butt-Gansner Spur	0.9
Butterfly Valley-Twain Rd	1.4
CA Highway 70	12.2
CA Highway 89	5.5
Caribou Rd	6.8
Dixie Canyon Round-Long Valley Rd	6.2
Greenville-Genesee Rd	1.7
Seneca Rd	7.1
Total	45.4

Mechanical or manual thinning and fuels reduction treatments will be used to repair, maintain, or construct fire management features. The base fire management feature prescription is composed of three layered vegetation treatments: 1) remove trees and vegetation taller than two feet 50 feet in both directions from the feature centerline for a total treatment width of 100 feet, 2) thin trees and vegetation to ten percent canopy cover 150 feet in both directions from the feature centerline for a total treatment width of 300 feet, and 3) remove snags 200 feet in both directions from the feature centerline for a total treatment width of 400 feet.

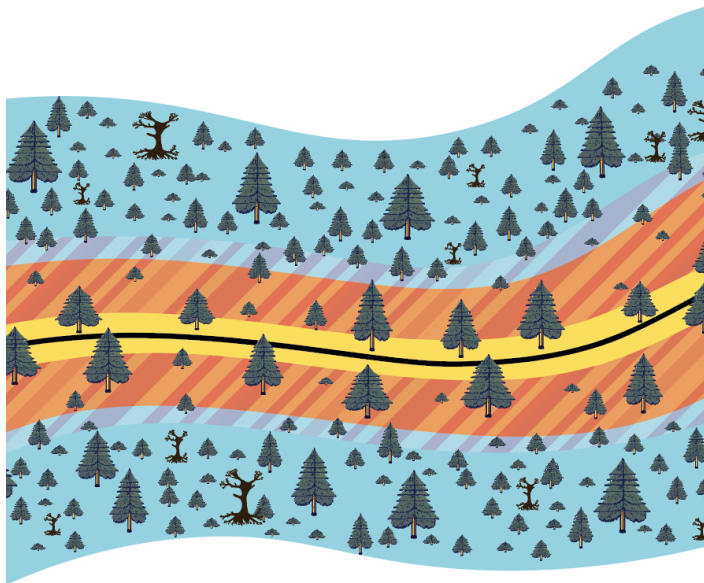
The prescription along ingress-egress routes also includes variable-density thinning with a target rSDI of 25 percent of maximum 660 feet in both directions from the road centerline for a total treatment width of 1,320 feet.⁶

Maintenance of these corridors would be performed with one or more of the following treatments: manual thinning, mechanical thinning, prescribed fire, or targeted grazing. Maintenance actions would be triggered when fuel and forest conditions impair wildland fire managers' ability to achieve fire suppression objectives, such as when a direct attack by an engine or handcrew is no longer viable.

⁶ The rSDI target is averaged across the full treatment width which includes the road itself and base vegetation treatments for each road segment.

Fire Management Feature - Ingress-Egress Route Prescription

-  Permanent Fire Control Line
-  Clear All Vegetation: >2ft tall- 50ft Both Sides of Feature Centerline
-  10% Canopy Cover Shaded Fuel Break: 150ft Both Sides of Feature Centerline
-  Snag Removal: 200 ft Both Sides of Feature Centerline
-  25% Target Stand Density Index (rSDI): 660 ft Both Sides of Feature Centerline



*Live trees >30" dbh will be retained throughout the treatment unit in accordance with existing Forest Plan guidelines

Figure 4: Illustration of the ingress-egress route prescription

Fire Management Features Overlapping CSO and AGOS PACs

Fire management features have been designed to avoid intersecting CSO and AGOS PACs wherever possible to maintain habitat connectivity, limit fragmentation, and minimize impacts to PACs.

PACs within the project area were analyzed and amended (re-mapped) after the 2021 Dixie Fire to account for post-fire habitat loss using the best available GIS and remote sensing data. PACs were re-mapped using available adjacent acres of equal or greater suitability where habitat was lost to fire and fuels conditions remain unfavorable.

PACs were further analyzed and amended where it was not possible to re-route fire management features (e.g., critical ingress-egress routes such as State Highways 70 and 89) that overlap with PACs. Where suitable adjacent habitat exists, PACs were re-mapped to maintain acreage equivalent to the quantity of the treated PAC acres using adjacent acres of comparable quality wherever possible. This strategy is described in the SNFPA ROD (2004): "PACs may be re-mapped during project planning to avoid intersections with treatment areas,

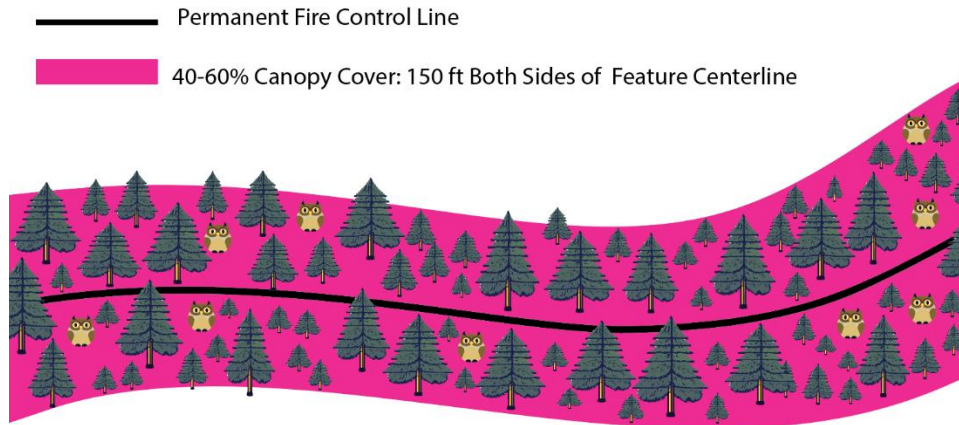
provided that the re-mapped PACs contain habitat of equal quality and include known nest sites and important roost sites” (S&G 71).

Due to significant habitat loss following the 2021 Dixie Fire, it was not possible to re-map all PACs that intersect fire management features. Where fire management features overlap PACs, treatments are designed to minimize impacts to reproductive owls and key owl habitat elements, in line with the 2019 CSO Strategy. Generally, the highest quality habitat (CWHR 6, 5D, 5M) would be maintained, especially in areas with higher canopy cover (more than 55 percent) in large/tall trees (USDA FS 2019). Fuels treatments in PACs would be designed to manage for low- and moderate-intensity fires (flame lengths less than 4 feet and less than 6 feet, respectively) by reducing surface and ladder fuels and minimizing impacts to the overstory canopy.

The fire management feature prescription in PACs is to reduce surface and ladder fuels and thin trees and vegetation to between 40 to 60 percent canopy cover (depending on CWHR density class) 150 feet in both directions from the feature centerline for a total treatment width of 300 feet. In CWHR density class “M” stands, the canopy cover target is 40 percent, and in “D” stands the target is 60 percent.

These treatments would maintain habitat structure and function to provide continued nesting and roosting opportunities while meeting fire hazard reduction objectives and maintaining public and firefighter safety.

Fire Management Feature - Owl and Goshawk Protected Activity Center (PAC) Prescription



*Live trees >30" dbh will be retained throughout the treatment unit in accordance with existing Forest Plan guidelines

Figure 5: Illustration of the fire management feature prescription in owl and goshawk PACs

Table 14: Fire management feature mileage summary

Feature Type	Miles
Permanent fire control line	149.0
Ingress-egress route	45.4
Total	194.4

Table 15: Fire management feature treatment acreage summary

Treatment	Acres
Clear vegetation greater than 2 feet tall	1,695
Remove all snags	6,621
Shaded fuelbreak: 10% canopy cover	3,891
Shaded fuelbreak: 40% canopy cover	248
Shaded fuelbreak: 50% canopy cover	666
Shaded fuelbreak: 60% canopy cover	100
Hand thin: reduce surface and ladder fuels ⁷	1,143
Mechanical thin: target rSDI 25%	3,488
Total	17,852

Other Areas

Other areas within the project area include the general forest matrix, National Forest System (NFS) roads, and trails.

⁷ Hand thinning will be utilized along fire management features where steep slopes or management restrictions prevent the use of mechanical equipment.

The general forest matrix refers to unburned and low-severity burned conifer forests within the project area. Within the general forest matrix, relative stand density index will inform appropriate actions. Relative stand density index (rSDI) measures relative inter-tree competition, or how crowded a stand is, and can be used to determine if a particular area would benefit from thinning. It is calculated as a percentage of a maximum value, which varies by species and forest type. As stands approach an rSDI of 60%, they reach what is known as the “zone of imminent mortality,” where trees begin to die from competitive stress (Long and Shaw 2005). Traditional forestry practices of the twentieth century focused on maintaining rSDI greater than 35% to sustain stand growth, and scheduling thinning harvests before rSDI reached 60% to avoid density-dependent mortality (Drew and Flewelling 1979). Recent studies suggest that average rSDI values in historic fire-adapted forests were closer to 23-28% (North et al. 2022). Based on the best available scientific information, the general target rSDI within the project area would be 25%-35%. This value will vary in other treatment focus areas where alternate management objectives prevail, such as retaining denser forests to provide wildlife habitat.

National Forest System (NFS) roads, or “system roads,” are inventoried, maintained, and managed by the Forest Service and are necessary for the protection, administration, and use of National Forests. NFS roads will be targeted for hydrological improvements as well as hazard tree removal and thinning treatments where appropriate.

Proposed trails are located near the communities of Greenville and Taylorsville (Mt. Jura). Maps are provided in Appendix A: Project Maps.

Project-Specific Forest Plan Amendments

The North Fork Forest Recovery Project proposes project-specific Forest Plan amendments to the Plumas National Forest Land and Resource Management Plan (LRMP 1988) as amended by the Sierra Nevada Forest Plan Amendment Record of Decision (SNFPA ROD 2004). The need to amend the Forest Plan is driven by the project's two-fold purpose and need: to protect communities from catastrophic wildfires and improve forest resiliency.

The SNFPA ROD specifies basal area and canopy cover requirements in mechanical thinning treatments in mid- to late-seral stage forest habitats outside WUI defense zones (SNFPA ROD p. 50). It also specifies an upper tree diameter limit of 30 inches DBH in mechanical thinning treatments. This basal area, canopy cover, and tree diameter requirements continue to be utilized in most situations, however necessary exceptions to address forest resiliency against high-severity wildfires are supported by the best available science (Safford and Stevens 2017, North et al. 2022). This project proposes using the metric of relative stand density index

instead of basal area and canopy cover to meet forest health and resiliency goals. Relative stand density index (rSDI) measures relative inter-tree competition, or how crowded a stand is. Using rSDI will facilitate the replication of historic tree stand densities (23-28% rSDI), which were much lower than present-day densities (North et al. 2022). Forest resilience in this project area will require significantly reducing tree stand densities, and rSDI can be used to quantifiably replicate historic forest stands with minimal competition and vigorous tree growth. In high-quality California spotted owl habitat, canopy cover specifications would be used in conjunction with rSDI to achieve desired conditions for wildlife habitat.

Proposed changes include modifying, removing, and adding specific forest plan components to improve forest resiliency, reduce the risk of catastrophic wildfires, and protect life and property by reducing fire hazards in proximity to communities. The proposed project-specific Forest Plan amendments, described in Appendix B: Project-Specific Forest Plan Amendments and Substantive Requirements, would apply only to the North Fork Forest Recovery Project.

Regional CSO Project-Specific Plan Amendment Components

In January 2024, Regional Forester Jennifer Eberlien directed forests with projects that contain 2019 California Spotted Owl (CSO) Conservation Strategy-related amendments to work with the Regional Office on the plan amendment process and use consistent amendment language. On June 25, 2024, the Regional Office released required plan amendment components for projects that may impact California spotted owl habitat in the Sierra Nevada and are pursuing a project-specific forest plan amendment. In accordance with this updated direction, these additional components were added to the North Fork Forest Recovery Project (B-3: Regional CSO Project-Specific Forest Plan Amendments).

The new amendment components incorporate updated scientific information based on the 2019 California Spotted Owl Conservation Strategy and the need to adapt our management approaches due to wildfire threats to spotted owl habitat. The amendment components were developed collaboratively based on forest plan content in the 2023 Sierra and Sequoia Forest Plans and modified based on lessons learned from recent project-specific forest plan amendments, feedback from internal and external engagement, and the draft USFWS CSO Programmatic Consultation.

Substantive Provisions Directly Related to the Proposed Amendments

In accordance with 36 CFR 219.13, the Responsible Official has determined the following substantive requirement(s) within §§219.8 through 219.11 are directly related to the plan direction being added, modified, or removed by the proposed amendments:

- **36 CFR 219.8:** Sustainability, **(a)** Ecological sustainability, **(1)** Ecosystem Integrity;

- **36 CFR 219.9:** Diversity of Plant and Animal Communities, **(a)** Ecosystem plan components, **(1)** Ecosystem integrity and **(2)** Ecosystem diversity, **(b)** Additional, species-specific plan components;
- **36 CFR 219.10:** Multiple Use, **(a)** Integrated resource management for multiple use, **(1)** Aesthetic values, air quality, cultural and heritage resources, ecosystem services, fish and wildlife species, forage, geologic features, grazing and rangelands, habitat and habitat connectivity, recreation settings and opportunities, riparian areas, scenery, soil, surface and subsurface water quality, timber, trails, vegetation, viewsheds, wilderness, and other relevant resources and uses, **(5)** Habitat conditions, subject to the requirements of § 219.9, for wildlife, fish, and plants commonly enjoyed and used by the public; for hunting, fishing, trapping, gathering, observing, subsistence, and other activities (in collaboration with federally recognized Tribes, Alaska Native Corporations, other Federal agencies, and State and local governments), **(7)** Reasonably foreseeable risks to ecological, social, and economic sustainability, **(8)** System drivers, including dominant ecological processes, disturbance regimes, and stressors, such as natural succession, wildland fire, invasive species, and climate change; and the ability of the terrestrial and aquatic ecosystems on the plan area to adapt to change (§ 219.8);
- **36 CFR 219.11:** Timber requirements based on the NFMA, **(c)** Timber harvest for purposes other than timber production, **(d)(3)** Limitations on Timber Harvest.

Each of the substantive requirements set forth in 36 CFR 219.8 through 36 CFR 219.11 provide an overarching purpose the regulation seeks to achieve, as well as specific plan components to meet that purpose. Application of the directly related substantive requirements listed above entails documenting that 1) the amended plan will meet the overarching purpose of each specific substantive requirement; 2) identifying specific plan components that ensure the purpose is met; and 3) explaining how the agency action triggering the amendments (in this case the North Fork Forest Recovery project) is consistent with the purpose of the substantive requirement.

Alternatives Considered But Eliminated from Detailed Study

The Plumas National Forest considered multiple alternatives for the North Fork Forest Recovery Project but ultimately decided not to analyze them as they did not meet the project's objectives. These alternatives included the exclusive use of defensible space pruning within 200 feet of homes, structures, and evacuation routes, as well as the exclusive use of fire (prescribed fire, managed wildfire, or Native American cultural burning) without additional forest treatments, such as thinning, tree removal, or reforestation.

These alternatives were not analyzed because they do not align with the project's Purpose and Need, which includes Community Protection & Strategic Fire Management and Forest and Watershed Health; the Purpose and Needs are described starting on page 5 of the Environmental Assessment. The project aims to address areas with high densities of fire-killed trees and hazardous fuel accumulations that pose a risk of crown fires, which increase danger to communities and infrastructure. Defensible space pruning within only 200 feet of structures would be insufficient to address broader fire risks, especially in the face of changing climate conditions. Recent megafires have shown that fire can spread long distances, requiring a landscape-scale treatment approach to mitigate risks. While creating defensible space around homes is important, broader landscape treatment is necessary to protect communities. Additionally, the Forest Service rarely has jurisdiction over the first 200 feet around homes, as these areas often fall on private property.

Prescribed fire alone, particularly outside of the 200-foot buffer around structures, was also considered but not analyzed due to the scale of the project. The Plumas National Forest currently treats only a limited number of acres per year with prescribed fire, making it an inefficient management tool to adequately treat the entire project area in a timely manner. Furthermore, many green stands remain overstocked and too dense for prescribed fire as an initial treatment. Hand thinning and mechanical treatments are necessary to create healthier forest conditions that will allow prescribed fire to be applied safely without harming the stand. Given the scale of the restoration needed and the project's objectives, both defensible space pruning and fire-only alternatives were deemed inadequate and not analyzed.

Design Features

Design features are project-specific measures set in place to protect resources from adverse effects. Design features have been developed for the following resources and topics: air quality, botanical resources, cultural resources, fire and fuels, herbicide use, hydrology and soils, minerals, range, roads, silviculture, recreation, and wildlife.

Appendix F: Design Features contains a complete list of design features.

3: Environmental Impacts

The US Forest Service requires projects to succinctly describe the environmental impacts of the proposed action and alternatives within the EA (36 CFR 220).

This section describes the affected environment and predicted environmental consequences (impacts) of the Proposed Action and No Action alternatives for each topic or resource.

Environmental impacts of the alternatives may include direct, indirect, and cumulative effects:

- **Direct effects** are caused by the action and occur at the same place and time as the action.
- **Indirect effects** are caused by the action and are later in time, or further removed in distance, but are still reasonably foreseeable.
- **Cumulative effects** are those that result from the incremental impact of the action when added to other past, ongoing, and reasonably foreseeable future actions.

The following specialist and supplementary reports were prepared to support analyses provided in this EA: Botany, Climate, Hydrology and Soils, Silviculture, Wildlife, and Past, Ongoing, and Reasonably Foreseeable Future Actions (PORFFA). These reports are available by request and in the project record.

Air Quality

This section describes compliance with relevant laws, regulations, and policy and compares the environmental impacts of the Proposed Action and No Action alternatives on air quality.

Relevant Laws, Regulations, and Policy

Clean Air Act

The Clean Air Act (CAA) is a comprehensive federal law aimed at controlling air pollution on a national level. It was first enacted in 1963 and has been amended several times since then to strengthen its provisions, most recently in 1990. The primary goal of the CAA is to protect public health and welfare by regulating emissions of harmful pollutants into the air.

Under the CAA, the Environmental Protection Agency (EPA) establishes primary and secondary National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM), sulfur dioxide (SO₂). Primary standards provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings (US EPA 2024).

The primary pollutants relevant to project activities (e.g., prescribed fire) are particulate matter less than 2.5 microns (PM_{2.5}) and particulate matter less than 10 microns (PM₁₀). Particulate matter must not exceed the levels as shown in Table 16.

Table 16: Primary and secondary NAAQS for particulate matter, measured in micrograms per cubic meter of air ($\mu\text{g}/\text{m}^3$)

Pollutant	Primary/Secondary	Averaging Time	Level	Form
PM _{2.5}	primary	1 year	9.0 $\mu\text{g}/\text{m}^3$	annual mean, averaged over 3 years
PM _{2.5}	secondary	1 year	15.0 $\mu\text{g}/\text{m}^3$	annual mean, averaged over 3 years
PM _{2.5}	primary and secondary	24 hours	35 $\mu\text{g}/\text{m}^3$	98th percentile, averaged over 3 years
PM ₁₀	primary and secondary	24 hours	150 $\mu\text{g}/\text{m}^3$	Not to be exceeded more than once per year on average over 3 years

Smoke Management Guidelines for Agricultural and Prescribed Burning

The California Air Resources Board (CARB) regulates air quality at the state-level. The CARB provides management direction for prescribed burning to local air quality management districts through the Smoke Management Guidelines for Agricultural and Prescribed Burning (17 CCR § 80100). These guidelines aim to balance the benefits of land management through controlled burning with the need to protect air quality and public health. Compliance with these guidelines helps mitigate smoke-related hazards and contributes to sustainable land stewardship practices throughout California.

The project area falls entirely within the Northern Sierra Air Quality Management District (NSAQMD), which covers Nevada, Plumas, and Sierra counties. Responsibilities of the NSAQMD include registering and permitting of agricultural and prescribed burns, meteorological and smoke management forecasting, daily burn authorization, and enforcement.

The main pollutant of concern within the district is PM_{2.5}. The district is in attainment for all criteria pollutants except for PM_{2.5} in the Greater Portola Area. The primary source of PM_{2.5} pollution in Portola is residential wood burning. Elevated PM_{2.5} concentrations occur during the winter months when stagnant air conditions are coupled with increased need for home heating. On those days, emissions from wood burning contribute almost 90 percent of particle pollution (California Air Resources Board 2022).

The NSAQMD maintains a proactive smoke management program for open burning and administers a wood stove change-out program, which helps households in the Greater Portola Area upgrade to more efficient and cleaner burning EPA-certified wood stoves. Portola is 16 miles from the project boundary, and 33 miles from the project's geographic center.

Regional Haze Rule

The Regional Haze Rule, established under the CAA, calls for state and federal agencies to work together to improve visibility and reduce regional haze in impaired Mandatory Class I Federal Areas. Mandatory Class I Federal Areas include national parks and wilderness areas greater than 5,000 acres established before 1977 (40 CFR part 81). Regional haze is a term

used to describe the white or brown haze that obstructs vistas. It is caused by fine particles in the air including sulfates, carbon, soots, and nitrates. The Regional Haze Rule primarily targets emissions from major stationary sources such as power plants and industrial facilities, but wildfire and prescribed fire smoke can also significantly impact visibility.

Although there are no Mandatory Class I Federal Areas within the project area, three are located within 50 miles of the project area: Lassen Volcanic National Park, Caribou Wilderness Area, and Thousand Lakes Wilderness Area. Wildfire emissions are the largest single source of particulate pollution in California and contribute significantly to visibility in Mandatory Class I Federal Areas (California Air Resources Board 2022). Prescribed fire emissions likewise impair visibility, but proactive smoke forecasting, monitoring, and management efforts by the USDA Forest Service, CARB, and NSAQMD help to minimize air quality and public health impacts from prescribed burning.

Proposed Action

The Proposed Action includes several treatment types that impact air quality, including prescribed fire, variable-density thinning, fuels reduction, reforestation, and invasive species management. Direct, indirect, and cumulative effects for these treatments are described below.

Direct and Indirect Effects

Prescribed fire has the most potential for direct air quality impacts. The combustion of vegetation and organic matter during prescribed fires releases smoke into the atmosphere. Smoke contains particulate matter (PM), carbon monoxide (CO), nitrogen oxides (NO_x), volatile organic compounds (VOCs), and other pollutants. These pollutants can degrade air quality and negatively impact health outcomes, especially for sensitive individuals. In addition to health impacts, smoke from prescribed fires can reduce visibility in the vicinity. Reduced visibility can pose hazards on roads and highways, as drivers may have limited visibility of the road ahead and other vehicles. Reduced visibility can also adversely impact recreational experiences and nearby scenic vistas.

Variable-density thinning and fuels reduction activities could produce fugitive dust from skidding and hauling during dry seasons. Dust would be mitigated by standard contract requirements for road watering or other dust abatement techniques.

Prescribed fire, variable-density thinning, fuels reduction, reforestation, and invasive species management work in tandem to reduce fuels on the landscape, which decreases the risk of larger, uncontrolled wildfires. By conducting prescribed burns under controlled conditions, fire managers can better manage smoke production and dispersion. Timing, weather

conditions, and other factors can be carefully considered to minimize the impact of smoke on air quality and public health. Prescribed burning activities would be conducted in compliance with state, federal, and county air quality standards and follow smoke management plans to mitigate adverse air quality impacts.

Cumulative Effects

Although the USDA Forest Service is the largest organization using prescribed fire as a land management tool in the vicinity, prescribed fires are also conducted on local public and private land. Project implementation would increase the total amount of prescribed fire activities in the area. Strategic planning, monitoring, and coordination with the NSAQMD and other prescribed fire practitioners will mitigate cumulative effects of smoke and pollutants on local and regional air quality.

No Action

Without active management, hazardous fuel loads would continue to accumulate, and the frequency and severity of wildfires would be predicted to increase. There would be no direct smoke production from prescribed fires, but there would be an increased likelihood of catastrophic wildfires that release large amounts of pollutants into the air. Wildfires generally produce about 200 percent more smoke compared to the amounts of smoke produced by prescribed burning (Liu et al. 2017). The potential for adverse effects on ambient air quality and regional haze would continue to increase.

Under the No Action Alternative, proposed post-fire reforestation areas would continue to grow unchanged and natural vegetation community succession would continue. This would likely result in large communities of brush intermingled with few trees. In both the short- and long-term time frame these areas would persist as shrub-dominated communities and would sequester less carbon compared to conifer forest stands that would be re-established in the Proposed Action.

Figure 6 and Table 17 compare effects of the No Action and Proposed Action alternatives on air quality indicators calculated using Blue Sky Playground 3.5.2. As shown in Figure 6, a wildfire burning across the entire project area would result in a 136% increase in per-acre PM_{2.5} emissions and a 205% increase in per-acre PM₁₀ emissions compared to a prescribed fire of the same size. For reference, the Dixie Fire burned 157,000 acres within the project area, severely degrading forest resources and emitting 37 million tons of CO₂ (California Air Resources Board 2022).

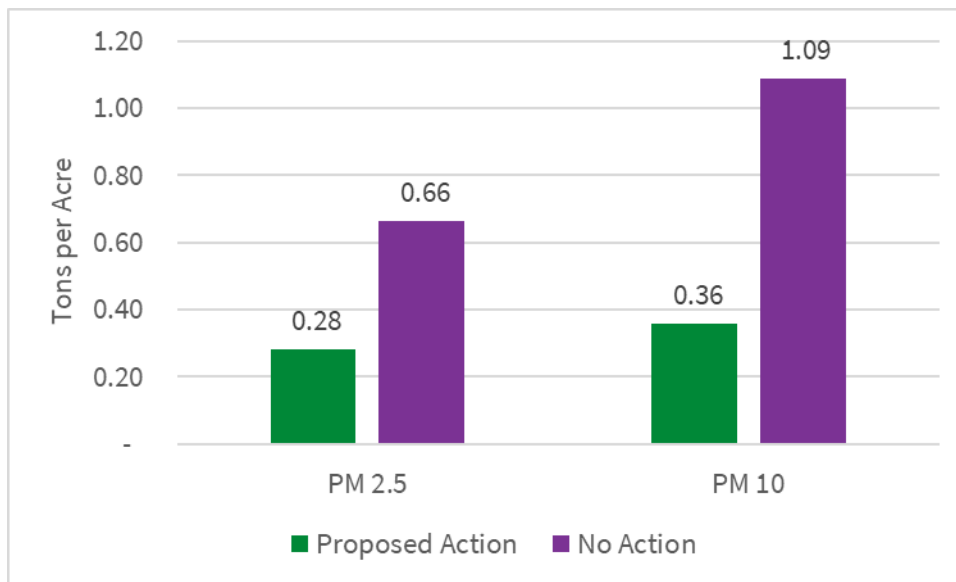


Figure 6: PM_{2.5} and PM₁₀ emissions (tons/acre) calculated using Blue Sky Playground 3.5.2 for project-wide prescribed fire across 166,889 acres (Proposed Action) and a wildfire burning the same area (No Action)

Table 17: Estimated pollutant emissions produced by burning 166,889 acres in prescribed fire and wildfire scenarios for the project area. All project acres and all vegetation types are included.⁸

Pollutant	Prescribed Fire Emissions (tons)	Wildfire Emissions (tons)
PM _{2.5}	47,001	110,781
PM ₁₀	59,638	181,647
CO	310,725	714,699
CO ₂	3,624,854	9,957,835
CH ₄	16,752	36,004
NO _x	2,263	7,322
VOC	74,021	222,536
NH ₃	2,126	5,928
SO ₂	2,415	7,531

Botany

This section discloses environmental impacts of the Proposed Action and No Action alternatives on botanical resources, including direct, indirect, and cumulative effects on special-status species and non-native and invasive species.

⁸ Emissions may be overestimated as the effects of the Dixie and Walker fires were not accounted for. Reduced emissions in previously burned areas would result in reduced emissions under both prescribed fire and wildfire scenarios.

Effects on Rare Plant Species

Proposed Action

The purpose of this assessment is to review the potential effects of the Proposed Action on Federally Endangered, Threatened, Proposed/Candidate, and Forest Service Region 5 Sensitive plant, lichen, and fungi species and their habitats (referred to collectively as TES botanical species). Approximately 22,711 acres have current botany survey coverage (i.e., surveyed within 10 years). Most areas impacted by the Dixie Fire have not been surveyed for status post-fire. Surveys for the appropriate rare plants will occur prior to any implementation. Management Prescriptions for conservation of rare species will be followed during implementation. The survey information used in the analysis (covered in the Biological Assessment and Evaluation for Botanical Resources) is from previous or ongoing projects within portions of the project area.

The tables below outline the rare species found in the project area or in close vicinity, and those that have high habitat potential to occur within the project area. There are no federally endangered or threatened species known to presently occur within the project area, but three were considered for effects due to potential for suitable habitat. There are 22 rare species known to occur within the project area. There are 12 sensitive species known to occur near the project area, or to have known habitat within the project.

Table 18: Rare species that occur in the project area and are analyzed for effects in this document

Species	Global Rankings	Forest Service Listing Status	CRPR List with Threat Code Ext.
<i>Astragalus pulsiferae</i> var. <i>pulsiferae</i>	G4T2	Sensitive	1B.2
<i>Astragalus webberi</i>	G1	Sensitive	1B.1
<i>Boechera constancei</i>	G2	Sensitive	1B.1
<i>Clarkia mildrediae</i> ssp. <i>mildrediae</i>	G3T2	Sensitive	1B.3
<i>Cypripedium fasciculatum</i>	G4	Sensitive	4.2
<i>Cypripedium montanum</i>	G2G5	Sensitive	4.2
<i>Eleocharis torticulmis</i>	G1	Sensitive	1B.1
<i>Eremogone cliftonii</i>	G3T3	Sensitive	1B.3
<i>Erythranthe percaulis</i>	G1	Watchlist	1B.1
<i>Frangula purshiana</i> ssp. <i>ultramafica</i>	G4T2T3	Sensitive	1B.2
<i>Ivesia webberi</i>	G2	Federally Threatened	1B.1
<i>Lewisia cantelovii</i>	G3	Sensitive	1B.2
<i>Lewisia kelloggii</i> ssp. <i>hutchisonii</i>	G3G4T3Q	Sensitive	3.2
<i>Lewisia kelloggii</i> ssp. <i>kelloggii</i>	G3G4T2T3Q	Sensitive	3.2
<i>Monardella follettii</i>	G2	Sensitive	1B.2
<i>Monardella stebbinsii</i>	G2	Sensitive	1B.2
<i>Orcuttia tenuis</i>	G2	Federally Threatened	1B.1
<i>Oreostemma elatum</i>	G2	Sensitive	1B.2
<i>Packera layneae</i>	G2	Federally Threatened	1B.2
<i>Packera eurycephalus</i> var. <i>lewisrosei</i>	G4T4	Sensitive	1B.2

Species	Global Rankings	Forest Service Listing Status	CRPR List with Threat Code Ext.
<i>Penstemon personatus</i>	G2	Sensitive	1B.2
<i>Poa sierra</i>	G3	Sensitive	1B.3
<i>Pyrocoma lucida</i>	G3	Sensitive	1B.2
<i>Sedum albomarginatum</i>	G2	Sensitive	1B.2
<i>Sedum paradisum</i> ssp. <i>subroseum</i>	G3G4T2	Watchlist	No Ranking

Table 19: Sensitive species that are not known to occur in the project area, but either occur in the direct vicinity or have high likelihood of habitat potential

Species	Global Rankings	Forest Service Listing Status	CRPR List with Threat Code Ext.
<i>Botrychium ascendens</i> (Upswept Moonwort)	G4	Sensitive	2B.3
<i>Botrychium crenulatum</i> (Scalloped Moonwort)	G4	Sensitive	2B.2
<i>Botrychium minganense</i> (Mingan Moonwort)	G5	Sensitive	4.2
<i>Botrychium montanum</i> (Western Goblin)	G3G4	Sensitive	2B.1
<i>Botrychium pinnatum</i> (Northwestern Moonwort)	G5	Sensitive	2B.3
<i>Bruchia bolanderi</i> (Bolanders candle moss)	Not tracked	Sensitive	4.2
<i>Dendrocollybia racemosa</i> (branched collybia)	Not tracked	Sensitive	Not tracked
<i>Eremogone cliftonii</i> (Cliftons eremogone)	G3/S3	Sensitive	1B.3
<i>Meesia uliginosa</i> (Broad nerved hump moss)	G5	Sensitive	2B.2
<i>Mielichhoferia elongata</i> (Elongate copper moss)	G5	Sensitive	4.3
<i>Peltigera gowardii</i> (Veined water lichen)	G4/S3	Sensitive	4.2
<i>Phaeocollybia olivacea</i> (olive phaeocollybia)	Not tracked	Sensitive	Not tracked

Global rankings reflect the overall status of a species throughout its global range, with G1 representing critically imperiled species, and G5 representing secure and widespread species. Most species in this analysis fall under the G5 (secure) to G3 (vulnerable) range. State rankings are assigned similarly to global rankings, but reflect the imperilment status only within California. CRPR listings similarly reflect extirpation rankings and threat levels within California.

Direct and Indirect Effects

Direct effects occur when plants are physically impacted. Examples of proposed treatment activities that have the potential to directly affect rare plants include being stepped on; timber falling; crushing by vehicles or equipment; application of herbicides; temporary road and landing construction; and prescribed fire treatments. These actions can result in death, altered growth, or reduced seed set through physically breaking, crushing, burning, scorching, or uprooting plants.

Indirect effects are separated from an action in either time or space. These effects, which can be beneficial or detrimental to rare species, may include changes in vegetation composition, successional patterns, fire regimes, or the distribution and abundance of invasive plants. Adverse indirect effects are more likely to occur to those species that are intolerant of disturbance and tend to occupy interior forest habitats with high canopy cover, such as clustered lady's slipper and moonwort species.

In contrast, for those species that tolerate or are dependent upon some level of disturbance and inhabit gaps and forest openings, treatments may have beneficial indirect effects. For all rare species, negative effects may occur if prescribed burns are too hot; this has the potential to kill the seedbank and sterilize the soil. Burning hand or machine piles can also alter soil biotic and chemical properties for a number of years, which in turn greatly influences the degree and type of plant colonization into the fire-scarred site. Other indirect effects that are associated with herbicide treatments may include impacts to pollinators or mycorrhizae (fungi) that are associated with rare species.

For this project, the important activities to consider in analysis of indirect effects are vegetation and fuels management, herbicide application for invasive weed management, and site preparation related to reforestation activities. The direct and indirect effects of herbicides on rare species are considered negligible due to a combination of factors. Known rare plant occurrences will be flagged and separated spatially from invasive plant infestations for treatment purposes. Impacts to rare species would be limited with the design features and management prescriptions in place. These measures mitigate impacts by spatial separation, physical barrier, and use of herbicides that are selective to target invasive species.

Direct and indirect effects of silvicultural, vegetation, and fuels treatment activities on rare species would be minor due to the design features and management prescriptions in place. Some species would accept a small amount of minimized direct effects by machinery, ground disturbing fire line construction, tree felling, yarding, and skidding, affecting these plants by directly crushing and killing individuals.

It is difficult to assess and quantify the effects to suitable habitat without both specific locations of proposed actions and ground-truthing botanical surveys. While the botanical species analyzed vary widely in their ecological requirements and life history characteristics, many occur in similar broad habitat types where the effects of proposed management on suitable habitat are comparable.

Cumulative Effects

The effects of past activities on rare plant species in the botany analysis area are largely unknown. On the PNF, rare plant surveys did not begin until the early 1980s. In many cases, even when project-level surveys were conducted, there is very little documentation that describes whether past projects avoided or protected rare plant species during project implementation. In addition to these unknowns, changes have been made to the PNF Sensitive Species list. Therefore, in order to incorporate the contribution of past activities into the cumulative effects of the Proposed Action, this analysis uses the current abundance and distribution of rare plant species as a proxy for the impacts of past actions.

Over the past 30 years, the landscape in the botany analysis area has experienced moderate levels of past activity and, consequently, moderate levels of past disturbance. For those species that occupy open habitats and are tolerant of some level of disturbance, it is possible that past activities in the botany analysis area have had a beneficial effect by creating openings and areas of potential habitat across the landscape.

Forty-two percent of the project area burned at high-severity during the 2021 Dixie Fire. Updated vegetation mapping shows high rates of delayed mortality among the low and moderate severity burn classes. Most rare plant species do not benefit from high-severity wildfire, and some species face detrimental effects. This can result in widespread habitat loss and alteration. Some species, like rocky outcrop species, are not detrimentally affected by high-severity wildfire because their habitats are simply not reached by the fire effects.

Degraded conditions in sensitive riparian habitats are common through the fire footprint and surrounding area. This disturbance, paired with past disturbances from prior activities, have created a landscape that is susceptible to invasive plant introduction and spread. This has increased the overall risk to native plant communities and rare species.

A cumulative effect can result from the incremental impact of an action when added to the effects of past, present, and reasonably foreseeable future actions, affecting areas in and around the NFFRP area. The 300 ft buffer used in the botany analysis was also considered the cumulative effects analysis area. The temporal cumulative effects of past actions over the last 30 years, from 1994 through 2023, are based on an assessment of current baseline environmental conditions.

Potential cumulative impacts include damage to habitats and individuals from soil displacement activities, potential impacts from fuels reduction actions, and potential degradation of habitat from mechanical equipment use.

If existing management guidelines (such as field surveys, protection of known rare plant locations, and implementation of invasive plant mitigations) remain in place, the effects of future projects are likely to be minimal or similar to those described in this analysis. Ongoing activities, such as woodcutting, hunting, and dispersed recreation activities, are not likely to make a significant impact on rare plant species; however, these activities may act as vectors for invasive plant spread.

Determination

The treatments proposed have the potential to affect rare species in many ways. Treatments will inevitably occur within suitable habitat and adjacent to it for some of these species. Any impacts to these habitats and species would be short term and are not expected to impact the viability of these species. Due to the long-term nature of this project, over 160,000 acres being treated over the next 20 years, impacts to species will be spread out over the duration of the project. The long-term benefits to these species over the lifetime of this project are expected to outweigh any detrimental effects to species done in the implementation process. Management prescriptions and all other implementation guidelines protecting rare plant occurrences will be in place.

In combination with past, present, and future actions, implementation of the proposed action may affect individuals, but is not likely to lead to a loss of viability or a trend toward federal listing for FS TES and rare species. Planned actions will foreseeably occur within suitable habitat for rare species, but there is anticipated to be no sizable loss of habitat. Anticipated effects will be reduced by the project design features (Appendix F: Design Features) and the management prescriptions described in the Biological Assessment and Evaluation.

No Action

Under the No Action Alternative, no direct effects are anticipated because no project-related activities would be implemented. Following the Dixie Fire, thick brush stands would continue to grow and become denser, resulting in increased shading, duff, fuels accumulation, and eventually canopy closure. These conditions could negatively impact the rare plant species that have been documented within the botany analysis area by reducing the quality of existing habitat as well as the amount of potential, but unoccupied habitat. These stand conditions and the continued exclusion of fire would also increase the risk of catastrophic wildfire, which could have detrimental effects on all the rare species. Some species would likely be unaffected, such as those in rocky cliff habitats, serpentine rock outcrops, or low-severity patches that received beneficial effects following the Dixie Fire.

Under this alternative, the existing invasive plant infestations would continue to grow and likely spread to other areas of potential habitat. Invasive plant species pose a serious threat to

ecosystem function because of their ability to displace native species, alter nutrient and fire cycles, decrease the availability of forage for wildlife, and degrade soil structure. Invasive plant establishment and spread in the Botany analysis area can negatively affect potential habitat, not only for rare species, but also for all native plant species. The spread of invasive plant infestations is less likely to affect species that grow in rocky or serpentine habitats or other protected habitats that aren't overgrown.

Effects on Non-Native and Invasive Species

Proposed Action

Approximately 29 invasive plant species are known to be documented in the project area, or within the direct vicinity (Table 20). There are 803 mapped infestations within the project area totaling approximately 474 acres. Over the length of the project, these occurrences of these populations will be greatly reduced.

Approximately 22,110 acres were surveyed between 2014-2024. The need for additional surveys will be evaluated depending on the need to monitor known sites and a change in conditions. Future surveys will be conducted in all project implementation areas where ground disturbance is proposed and where recent survey data is not available.

Table 20: Priority non-native invasive plant species within the project area and vicinity

Scientific Name	Common Name	Form	Rank (CAL-IPC)
<i>Acroptilon repens</i>	Russian knapweed	Annual Herb	Moderate
<i>Aegilops triuncialis</i>	Barbed goatgrass	Annual Grass	High
<i>Aegilops cylindrica</i>	Jointed goatgrass	Annual Grass	Watch
<i>Ailanthus altissima</i>	Tree of heaven	Tree	Moderate
<i>Bromus tectorum</i>	Cheatgrass	Annual Grass	High
<i>Centaurea solstitialis</i>	Yellow starthistle	Perennial Herb	High
<i>Centaurea stoebe ssp. micranthos</i>	Spotted knapweed	Perennial Herb	Moderate
<i>Chondrilla juncea</i>	Skeleton weed	Perennial Herb	Low
<i>Cirsium arvense</i>	Canada thistle	Perennial Herb	High
<i>Cytisus scoparius</i>	Scotch broom	Shrub	Moderate
<i>Dittrichia graveolens</i>	Stinkwort	Annual herb	Moderate
<i>Elymus caput-medusae</i>	Medusahead	Annual Grass	Moderate
<i>Genista monspessulana</i>	French broom	Shrub	High
<i>Isatis tinctoria</i>	Dyer's woad	Annual Herb	Moderate
<i>Lepidium latifolium</i>	Pepperweed	Perennial Herb	High
<i>Linaria dalmatica</i>	Dalmatian toadflax	Perennial Herb	Low
<i>Lythrum salicaria</i>	Purple loosestrife	Perennial Herb	High
<i>Onopordum acanthium</i>	Scotch thistle	Annual Herb	High
<i>Phytolacca americana</i>	Common pokeweed	Perennial Herb	Limited
<i>Potentilla recta</i>	Sulfur cinquefoil	Perennial Herb	Low
<i>Robinia pseudoacacia</i>	Black locust	Tree	Limited
<i>Rubus armeniacus</i>	Himalayan blackberry	Shrub	High
<i>Rumex acetosella</i>	Sheep sorrel	Perennial Herb	Moderate

Scientific Name	Common Name	Form	Rank (CAL-IPC)
<i>Rumex crispus</i>	Curly dock	Perennial Herb	Limited
<i>Sorghum halepense</i>	Johnson grass	Perennial Grass	Pending
<i>Spartium junceum</i>	Spanish broom	Shrub	High
<i>Ventenata dubia</i>	Wiregrass/North Africa grass	Annual Grass	High
<i>Vinca major</i>	Vinca	Perennial Herb	Moderate
<i>Xanthium strumarium</i>	Rough cocklebur	Annual Herb	High

Direct and Indirect Effects

Activities from the proposed action to reduce and remove existing invasive species infestations will reduce the presence of these species throughout the project area. It will be difficult to achieve complete eradication and control of many of these species due to the size and nature of their infestations. While proposed treatments will reduce the existing populations, the proposed activities will also increase risks of invasive species spread by introducing additional vectors and altering forest habitats. Short-term ground disturbing activities will occur.

Other ground disturbing activities such as grazing allotments, recreational activities, and wood cutting would continue to be potential vectors for introduction but would be candidates for control measures. With management prescriptions and design features, there would be a minimal expected establishment of new non-native and invasive species infestations.

Cumulative Effects

Throughout the project area and over time, past and current activities have contributed to the spread of invasive species. The spread of these species to new sites and habitats will inevitably occur, but the project itself would decrease the rate of spread and aim to control populations with the proposed invasive species treatments.

Past activities in the project area have resulted in various levels of disturbed, or altered, habitat. These activities include but are not limited to: mining, timber harvest, historical grazing, wildfire, road construction, and recreational activities. Disturbed habitats can be more highly susceptible to invasive infestations due to either direct effects from alterations (such as destruction of vegetation), or indirect effects such as changes in canopy cover, moisture, and other site conditions. Areas directly burned in the Dixie Fire at high severity are at particularly high vulnerability to invasive plant colonization, and disturbance from implementation activities could increase the spread.

No Action

Under the No Action Alternative, invasives would continue to spread. Control measures would be limited to the actions proposed in prior signed NEPA decisions for smaller project areas

and to future planned projects. Without action, infestations could expand beyond feasible control measures.

Climate Change

National forests and grasslands play an important role in climate change mitigation as they are carbon sinks. Keeping forest lands healthy and resilient is paramount to our success as more extreme climate events occur. As part of promoting balanced ecosystems on the Plumas National Forest, management objectives of the North Fork Forest Recovery Project include restoring forested areas burned by the Dixie Fire; improving forest health and resilience to changes in environmental conditions; reducing the risk from wildfire to human life and property by reducing fuels; providing an economic benefit to local communities; and improving the overall recreation experience and safety of recreational facilities through facilities improvements. To help support a resilient forest ecosystem removing tree density to reduce competition will help improve stand health and reduce the risk of high fire severity. These management objectives have been developed in response to the past management and history of the Plumas National Forest. Decades of fire suppression have resulted in dangerous levels of fuel loading, which, in conjunction with climate change, drive increases in wildfire intensity and result in catastrophic wildfires such as the 2021 Dixie Fire. The management actions described in the North Fork Forest Recovery Project assess carbon stocks. The anticipated impacts on carbon over the project's lifetime include a short-term carbon loss from tree harvesting and prescribed fire to reduce fuel loads, and long-term carbon gains due to reforestation and increased forest resilience to fire, insects, and drought, improving the long-term storage of above-ground carbon. Adaptation to climate change through landscape-scale fuel treatments has been shown to increase carbon stability and decrease the risk of catastrophic emissions from megafires (Hessburg et al. 2021). Proposed Action

Direct and Indirect Effects

Under the Proposed Action, the North Fork Forest Recovery Project would affect carbon through actions including prescribed fire, variable density thinning and fuel reduction

through mechanical and hand thinning methods, hazard tree removal, reforestation, and invasive species management.

Harvest

As shown in the 2021 Dixie Fire, which burned approximately 157,000 acres within the project area and released 37 million tons of CO₂ over the entire affected area, the combination of overly dense forests, abundant ladder fuels, and increasing aridity in a warming climate creates the potential for massive destruction of forest resources and CO₂ emissions. Climate projections suggest the project area will experience increased temperatures with insignificant changes in precipitation, causing increased aridity which could result in large potential losses from fire, drought, and insects. Thinning dense forest stands under the Proposed Action will reduce the chance of catastrophic wildfires, as well as losses due to drought and insects, but there will likely be a temporary decrease in aboveground carbon stocks. Under the Proposed Action, the project will remove green material—both sawlogs and biomass—with 1,566,270 tons CO₂eq (total harvest transfer for biomass plus total harvest transfer for sawlogs) from the forest ecosystem (Table 21 and Table 22). Available forest data does not accurately account for the Dixie Fire and therefore rough estimates are assumed and can be found in the Climate Specialist Report.

The estimate of 1,566,270 tons CO₂eq in atmospheric emissions is higher than actual emissions due to ongoing carbon storage in harvested wood products (HWP). After 100 years, approximately 230,218 tons CO₂eq will remain stored in these products, either in use or in landfills. This means that the adjusted estimated atmospheric emissions from harvested sawlogs would be about 415,968 tons CO₂eq.

It's important to note that these figures come with uncertainties. Factors like additionality, which assesses the real changes in carbon emissions due to specific activities, and leakage, which considers the potential for increased fossil fuel use outside the defined system, are not included in these estimates. As such, the numbers reflect an upper bound for the HWP sector's potential to mitigate carbon emissions from harvesting. Additionally, there's an estimate of 4,351,942 tons CO₂eq for carbon stored in dead standing trees, which highlights another aspect of carbon storage within forest ecosystems. Overall, while HWPs can contribute to carbon storage, the complexity of factors involved in carbon accounting must be acknowledged.

Table 21: Biomass Carbon transfer and maximum substitution potential live tree estimates based on Entity Guidelines tool analysis

Project-Level Biogenic Carbon Transfers: Biomass	Carbon (t CO₂eq)
Total harvest transfer	920,084

Project-Level Biogenic Carbon Transfers: Biomass	Carbon (t CO₂eq)
Carbon storage, HWP in use/in landfill, year 100	0
Cumulative net harvest emissions, project timeline	920,084

Table 22: Sawlog Carbon transfer and maximum substitution potential live tree estimates based on Entity Guidelines tool analysis

Project-Level Biogenic Carbon Transfers: Sawlogs	Carbon (t CO₂eq)
Total harvest transfer	646,186
Carbon storage, HWP in use/in landfill, year 100	-230,218
Cumulative net harvest emissions, project timeline	415,968

Prescribed Fire

Carbon emissions associated with prescribed fires come mainly from the combustion of duff, litter, and small-sized dead wood, which would otherwise decay and release carbon even in the absence of fire. The project's prescribed fire treatments will primarily affect understory and forest floor carbon pools. Together, these pools comprise about 9.4 percent of the forest-wide ecosystem carbon stocks.

Prescribed fires tend to target surface and ladder fuels and are typically less severe than wildfires (Agee & Skinner 2005; Hunter & Robles 2020) since they are conducted only when weather conditions are optimal, and fuel moisture is high enough to keep combustion and spread within predetermined limits. Thus, prescribed fire typically results in limited overstory tree mortality and limited combustion of available fuel (Carter & Darwin Foster 2004; Hurteau & North 2008; Waldrop & Goodrick 2012). This produces lower GHG emissions than if the same area burned in a high-severity wildfire (Wiedinmyer & Hurteau 2010). Under the Proposed Action, prescribed fire will occur through a variety of methods, including jackpot burning, pile burning, and understory burning. See Prescribed Fire Emissions Figure 6 and Table 17.

Rangeland Management, Improvements, and/or Permitted Livestock Grazing

Proper grazing management alone has been estimated to increase soil carbon storage in the USA rangelands from 0.1 to 0.3 Mg carbon per ha per year (Schuman et al. 2002). Under the Proposed Action, grazing will be utilized to reduce fuel loads and create fire management features while producing additional economic benefits. Grazing combined with thinning has been shown in modeling studies to reduce the severity of wildfires (Donovan et al. 2022). The reduction of wildfire severity will likely reduce carbon emissions, improve ecosystem resilience, and increase carbon stocks.

Reforestation
Reforestation can result in long-term increases in carbon stocks in forest ecosystems. Both natural regeneration and tree planting can assist in post-disturbance recovery of forest ecosystems (USDA Forest Service 2022). The Forest Service has internal directives and guidance related to management activities for maintaining, regenerating, and restoring forest

cover, including reforestation. Managed reforestation following disturbance events can enhance carbon ecosystem functions by increasing woody biomass and sequestration rates, with immediate and long-term carbon benefits. Research indicates that natural reforestation following large high-severity wildfire is limited and may decrease further in a warmer and more arid climate, necessitating active reforestation (Stevens-Rumann and Morgan 2019).

Analyzing the potential carbon storage from a combination of natural regeneration and active reforestation results in the storage of over 9 million tonnes of CO₂eq. This is nearly 300,000 tonnes of CO₂eq of additional storage compared to the No Action Alternative. Combining the harvest emissions with the carbon storage from natural regeneration and planted reforestation in the proposed action, it is estimated that the Proposed Action will result in roughly 4 million tonnes of CO₂eq of additional carbon storage.

Invasive Species Management

Invasive species are a major threat to the health, sustainability, and productivity of native ecosystems (Poland et al. 2021). Impacts from invasive species in terrestrial ecosystems include alterations to species abundance and distribution, fire regimes, belowground biotic and abiotic processes, and availability of resources to native species. Invasive plants also impact primary productivity and nutrient cycling and frequently accelerate carbon cycling. The Proposed Action, proposing to remove invasive species, may increase carbon sequestration by reducing invasive species coverage and allowing for more effective reforestation.

Fossil Fuel Emissions Associated with Project Implementation

The following are sources of fossil fuel emissions associated with project implementation: road construction, transportation emissions associated with hand thinning, mechanical thinning, and prescribed fire, and emissions from equipment operations.

Cumulative Effects

The Proposed Action is likely to decrease carbon stocks over the short term. However, reforestation activities and long-term increase in resilience will likely increase stored carbon due to the decrease in the likelihood of large, high-severity wildfires. In the Proposed Action, a decrease in carbon stocks will occur through the removal of standing dead trees and the thinning of overly dense forests. In 2021, the largest source of forest sector emissions in the United States was the conversion of forest land to non-forest, with estimated losses of 144.4 MMT CO₂eq (Domke et al. 2023; EPA 2023). The proposed activities in the North Fork Forest Recovery Project will not result in the loss of forest land from the PNF. In fact, forest health and long-term stability are enhanced by the thinning and removal of fuels, including standing dead trees from burned areas. Without implementation of the Proposed Action, it is possible

that the forest area could experience a land cover type conversion because of rapidly changing climate conditions. Some assessments suggest that the effects of climate change in some United States forests may cause shifts in forest composition and productivity or prevent forests from fully recovering after severe disturbance (Anderson-Teixeira et al. 2013), thus impeding their ability to take up and store atmospheric CO₂ and retain other ecosystem functions and services.

The proposed actions are consistent with options proposed by the Intergovernmental Panel on Climate Change (IPCC) for minimizing the impacts of climate change on forests, thus meeting objectives for both adapting to climate change and mitigating GHG emissions (McKinley et al. 2011). They are also consistent with many existing carbon management strategies (Kaarakka et al. 2021; Ontl et al. 2020). These considerations are increasingly important as wildfire, drought, insects and disease, and combinations of disturbance types can reduce ecosystem carbon storage and alter ecosystem functions (D'Amato et al. 2011; Millar et al., 2007). Short-term decreases in carbon stocks are anticipated from the proposed action due to the removal of standing dead trees, forest thinning, and burning of forest floor material. However, long-term carbon storage is expected to increase due to reforestation and improved resilience to fire, insects, and drought. The reduction in severe fires has particularly large potential for long-term carbon storage, considering that the Dixie Fire released 37 million tons of CO₂ in 2021 (CARB 2022).

No Action

Direct, Indirect, and Cumulative Effects

Under the No Action Alternative, no increase in GHG emissions would result from prescribed burning, off-road equipment usage, and worker commutes. However, under the No Action Alternative, the project area would also continue to be threatened and degraded by the impacts of a warming climate. Rising temperatures will increase aridity, resulting in large potential losses from fire, drought, and insects. The project area is likely to experience severe wildfires, as occurred recently during the Dixie Fire in 2021. The Dixie Fire burned nearly 1 million acres including approximately 157,000 acres within the project area, severely degraded forest resources, and emitted 37 million tons of CO₂ over the entire affected area (CARB 2022). Therefore, while short-term carbon stocks are likely to continue to increase under a No Action Alternative, there are long-term risks of drastically reduced carbon stocks due to large high-severity wildfires. Therefore, the No Action Alternative will result in periodic large releases of CO₂, which will severely degrade conditions in the project area and may release tens of millions of tons of CO₂ as occurred during the Dixie Fire.

Additionally, increases in local temperatures will limit carbon accumulation due to drought and insect-related pressures, as well as limited natural reforestation in areas which experienced high-severity wildfire.

Community Hazard Analysis

To conduct a community hazard analysis, this project examined demographic data within the project boundary to assess whether any specific demographics could be affected by the proposed actions. A determination must be made regarding whether the implementation of these actions may result in disproportionately high or adverse human health or environmental impacts on particular populations.

This community hazard analysis is focused on the local level (census block group and census tract) within the project boundaries. The area included in this analysis is where project related impacts would occur, including smoke from prescribed burning, and noise from fuels reduction equipment and activities. These activities could potentially cause an adverse and disproportionately high effect on neighboring communities, including low-income populations.

Plumas County meets the "low income" criteria as it has a median household income of \$57,885. In order to qualify in California as low income, locations must have a median household income of less than \$67,278, which is 80% of California's median household income (US Census Bureau 2021).

The NFFRP area covers two census tracts and four census block groups in Plumas County, California. Tables 23-25 depict the demographics for these census tracts and block groups.

- **Census Block Group:** A Census Block Group is a geographical area consisting of a group of Census Blocks. They are the smallest unit for which there is reliable and consistent demographic data. The use of block groups ensures all communities are addressed, including the entire dispersed population across the region. Block groups were selected based on project location and distance of potential impacts (less than half a mile from the proposed project boundary). Table 23: Census tract demographics within the project area, percentage of population by race
- **Census Tract:** Census Tracts are combinations of block groups. Census Tracts are relatively permanent geographic divisions of a county defined for the tabulation and presentation of data from the decennial census and selected other statistical programs. The primary goal of the census tract is to provide a set of nationally consistent small, statistical geographical units, with stable boundaries, that facilitate analysis of data across time.

Census Tract	White	Black	American Indian	Asian	Other race	Two or more races	Hispanic	Identified as low-income
Tract 4: Greenville	72%	0%	3%	3%	1%	13%	4%	Yes
Tract 5.02: Lake Almanor	87%	0%	0%	0%	0%	1%	10%	No
State	61.6%	21.4%	1.1%	6%	8.4%	10.2%	18.7%	

Table 24: Block group-level demographics within Tract 4, percentage of population by race

Block Group	White	Black	American Indian	Asian	Other race	Two or more races	Hispanic
1	75.6%	0.3%	6.3%	0.8%	0.3%	7.3%	9.2%
2	79.7%	0.1%	4.7%	0.3%	1.2%	5.9%	7.8%
3	73.3%	0.7%	8.8%	0.2%	0.9%	7.4%	8.7%

Table 25: Block group-level demographics within Tract 5.02, percentage of population by race

Block Group	White	Black	American Indian	Asian	Other race	Two or more races	Hispanic
1	86.7%	0%	0.7%	0%	1.1%	4.9%	6.7%
2	83.2%	0%	1.1%	0.9%	0.9%	8.5%	4.8%
3	86.8%	0.5%	0.5%	0.9%	0.3%	4.4%	6.4%

Proposed Action

Direct and Indirect Effects

The use of prescribed fire for fuels reduction is proposed throughout the project area.

Prescribed fire treatments will adhere to air quality regulations and are typically limited to short “burning windows.” Burns will be overseen by qualified personnel and occur during the spring or fall when conditions are safe. The proposed action would occur on Forest System lands and is expected to benefit surrounding communities. Prescribed burning would comply with Northern Sierra Air Quality Management District regulations which would ensure smoke production does not reach levels of concern. Air quality impacts would be short term and minimized with the implementation of design features, reducing direct, indirect, and cumulative impacts of smoke released by prescribed fire.

Implementation of the Proposed Action would result in short term, localized impacts to noise levels. However, these impacts would not occur at night, as Project activities would occur during the day, and would be limited to the duration that treatment activities occur in that area. Impacts to noise levels in the project area and the exposure of residents and forest visitors would be minor. Therefore, noise is not applicable for detailed analysis.

Plumas County is considered low-income and therefore protection of communities affected by the NFFRP is of the utmost importance.

To protect these communities, the following actions are proposed:

- Notify and effectively communicate burn schedule and locations
- Provide N95 masks to community members who request them
- Share educational fliers demonstrating how smoke can affect health and how to practice preventative care

- Provide a designated representative to address community member questions and concerns
- Use smoke prediction models to target mitigations specifically to those who will be in impact areas
- Share educational material on the smoke differences between wildfire and prescribed fire
- Collaborate with Northern Sierra Air Quality Management District to provide clean air respite centers in existing community buildings
- Provide no-cost, loan-based household air purifiers to those who request them (9 available from the local Prescribed Burn Association, Plumas Underburn Cooperative)
- Utilize community-conscious burn bosses, prescribed fire practitioners, and firefighters to implement prescribed fire
- Burn in favorable conditions to limit smoke impacts however possible

During the pre-implementation process, community members within and adjacent to the North Fork Forest Recovery Project will receive mailings, and notice of the project, including its location and proposed activities via mail, email, and print in the local newspaper.

Cumulative Effects

Prescribed burn treatments under the Proposed Action would be implemented over an extended period, spreading smoke exposure across multiple years. The possibility of cumulative effects with other prescribed burns in the area would be mitigated through coordination with Plumas Underburn Cooperative and Northern Sierra Air Quality Management District, to avoid ambient air quality levels reaching unhealthy levels.

Disproportionate impacts to low-income populations are not expected, and the mitigation measures mentioned above will serve to effectively communicate safety measures. The overarching goal of the NFFRP is to endure temporary consequences from proactive forest management procedures to mitigate catastrophic outcomes in the future, the likes of which have been witnessed by these very communities.

No Action

Direct, Indirect, and Cumulative Effects

The proposed treatments would not be implemented under the No Action Alternative, but ongoing forest management activities would continue. The No Action Alternative would likely exacerbate ecological and community hazards across the landscape due to the retention of overstocked fuels and lack of community infrastructure protection. For low-income communities, greater catastrophic wildfire risk, smoke production, and halted economic

activity ultimately represents greater economic burden compared to the proposed actions and mitigation measures.

Furthermore, the No Action Alternative will likely present higher risk to low-income populations by leaving overstocked forest stands untreated and at larger risk for a high intensity fire, which would produce significantly more damage and smoke than a prescribed burn on a treated forest stand.

Cultural Resources

This section discloses the environmental impacts of the alternatives on cultural resources. A cursory records search for the project area conducted by PNF Archaeologists identified more than 3,686 previously recorded cultural resources (e.g., precontact and historic sites) within the project boundary.

Previously recorded cultural resources indicate that precontact or Native American sites may include lithic scatters, milling features, bed rock mortars, ethnographic sites, and possible habitation sites. While historic-era sites may include logging camps, refuse scatters, cabins, homestead features, flumes, and other water conveyance systems, transportation systems/networks (roads, trails, railroads, etc.), transmission corridors, and aborglyphs.

Consistency with Relevant Laws, Regulations, and Policy

Section 101 of the National Environmental Policy Act (NEPA) requires the federal government to preserve important historic, cultural, and natural aspects of our national heritage. To accomplish this, federal agencies utilize the Section 106 process of the National Historic Preservation Act (NHPA). Passed by Congress three years before NEPA, the NHPA sets forth a framework for identifying and evaluating historic properties and assessing effects to these properties. This process is codified in 36 CFR 800 Subpart B.

Pursuant to 36 CFR 800, the 2021 National Programmatic Agreement among the U.S. Department of Agriculture Forest Service, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers, for phasing Section 106 of the National Historic Preservation Act for large scale multi-year undertakings has been developed to allow the Forest Service to carry out Section 106 of the NHPA with a phased approach. This National PA requires a Heritage Implementation Plan (HIP) to document how Section 106 responsibilities will be met post-NEPA decision but pre-implementation. In April 2023

The PNF developed the PNF Protect and Recover Project HIP in consultation with the Greenville Indian Rancheria, Susanville Indian Rancheria, Enterprise Rancheria, Berry Creek Rancheria, Mooretown Rancheria, Washoe Tribe of California and Nevada, Mechoopda Indian

Tribe of the Chico Rancheria, Maidu Summit Consortium, Konkow Valley Band of Maidu, Ya-Mani Maidu Cultural Association, Tasmam Koyom Foundation, Maidu Cultural Group and the California State Historic Preservation Officer (SHPO). The HIP agreement was signed by the Forest Supervisor in April, 2023.

Proposed Action

The Proposed Action would have no effect on cultural resources. Standard protection measures (SPMs) from the PNF HIP would be employed as design features and applied to all cultural resources within the project area for all the action alternatives. Application of SPMs would eliminate any potential adverse effects to cultural resources.

No Action

There would be no direct effects to cultural resources resulting from the No Action Alternative because no project activities would be implemented.

Section 106 consistency review and approval

If the PNF Protect and Recover Project HIP procedures, as developed under the National Programmatic Agreement for phasing Section 106, are followed there will be no effect to cultural resources. If the project area of potential effect is modified, additional review and approval by the District Archaeologist would be required.

Economics

The analysis of economic effects under the No Action and the Proposed Action alternatives includes estimates of the timber volume produced through silvicultural operations. The project economics are quantified by analyzing the revenues generated through timber sales and the costs associated with timber sale and service contract related jobs.

The economic analysis is not designed to model all economic factors used in an intensive and highly complex timber sale appraisal process, but provides a consistent and systematic approach to display the relative differences in financial efficiency (i.e. relevant revenues and costs) among the alternatives.

Proposed Action

Direct, Indirect, and Cumulative Effects

The Proposed Action would provide direct employment opportunities for logging, reforestation, and trucking contractors. Jobs would be created for foresters, harvesting technicians, truckers, agency personnel, and wood processing facility operators. Indirect employment and induced effects (those indirect effects determined by wages) include those

that provide support services, such as groceries, housing, transportation, fuel, and other related expenses. The sum of direct, indirect, and induced effects is the total economic impact in terms of jobs.

In addition to employment opportunities, the Proposed Action would generate timber yield tax income for Plumas County. Administered by the California State Board of Equalization, this tax is not paid by the National Forest but is paid by private timber operators and is based on the amount of timber harvested each year on both private and public lands. The tax is calculated as 2.9 percent of the value of the harvested timber. Approximately 80 percent of the timber yield tax is returned to the counties in which the timber was harvested. The Proposed Action would also provide Forest Reserve money to Plumas County. The county would receive 25 percent of the revenues raised from the sale of timber to be used for county projects.

Timber harvest is a byproduct of achieving the forest management goals that are aimed at management for resiliency and restoration. The net costs of implementing the activities in this plan are estimated to be as high as \$2,000 per acre of implementation for the activities focused on management for resiliency. Timber sales may help to manage net costs on these acres. The net benefit in terms of jobs, on a per acre basis, is estimated to be approximately \$5,000. Restoration net costs are estimated to be as high as \$2,500 to \$4,000 per acre. Restoration acres have little timber value to offset costs. Biomass sales may help to reduce net costs, but the market demand is not clear at this time. The benefits, in terms of job value, will likely be similar to the acres managed for resiliency. While these estimates may vary substantially in practice due to actual costs and availability of timber and biomass markets, they highlight the overall return to the community.

No Action

Direct, Indirect, and Cumulative Effects

Under the No Action Alternative, no treatments would be performed in the project area. Employment opportunities would not be created, and local economies would not see any economic benefits. The No Action Alternative would likely intensify ecological and socioeconomic threats by leaving overstocked forests providing surface, ladder, and crown fuels and increasing the likelihood of high intensity wildfires and their associated costs within the project area. High intensity wildfires would create costs associated with wildfire suppression, postfire recovery, loss of tourism and recreation, and impacts on community health, which would likely be higher under the No Action Alternative than under the Proposed Action. More importantly, a large wildfire could result in loss of life, as well as indirect and cumulative costs. Because the No Action Alternative would not include treatment activities, it

would not disproportionately affect low income or minority communities. However, the No Action Alternative would provide no wildfire protection benefits to communities.

Hydrology and Soils

This section describes anticipated impacts to hydrological resources and soils within a cumulative effects analysis area that includes all HUC-12 sub-watersheds that intersect the project boundary.

Proposed Action

Many of the treatments in the Proposed Action are considered common treatments with predictable resource effects. An analysis of those routine vegetation and road management actions can be found in the Soil and Water Effects Briefing Paper in Appendix A of the Hydrology and Soils Report. The hydrology and soil resource analysis will focus on the proposed steep slope mechanical treatments and reforestation treatments.

Direct and Indirect Effects

Steep Slope Mechanical Treatments

Even on relatively flat ground, conventional ground-based harvesting equipment has the potential to displace fine organic matter, woody debris, and rock; all of which currently provide effective soil cover. When this machinery operates on steeper slopes, the intensity of that displacement is expected to be somewhat increased. As a result of this decrease in soil cover, erosion potential will increase and contribute to indirect effects. Current conditions in steep slope units averaged: 53 percent effective soil cover. The effective soil cover standard of 50 percent on soils with moderate erosion hazard rating (EHR) is still expected to be met in these steeper units. Post-treatment ground cover requirements may be increased in areas identified as having high or extreme EHR (Figure 7), and monitoring will occur during operations to ensure BMPs are in place.

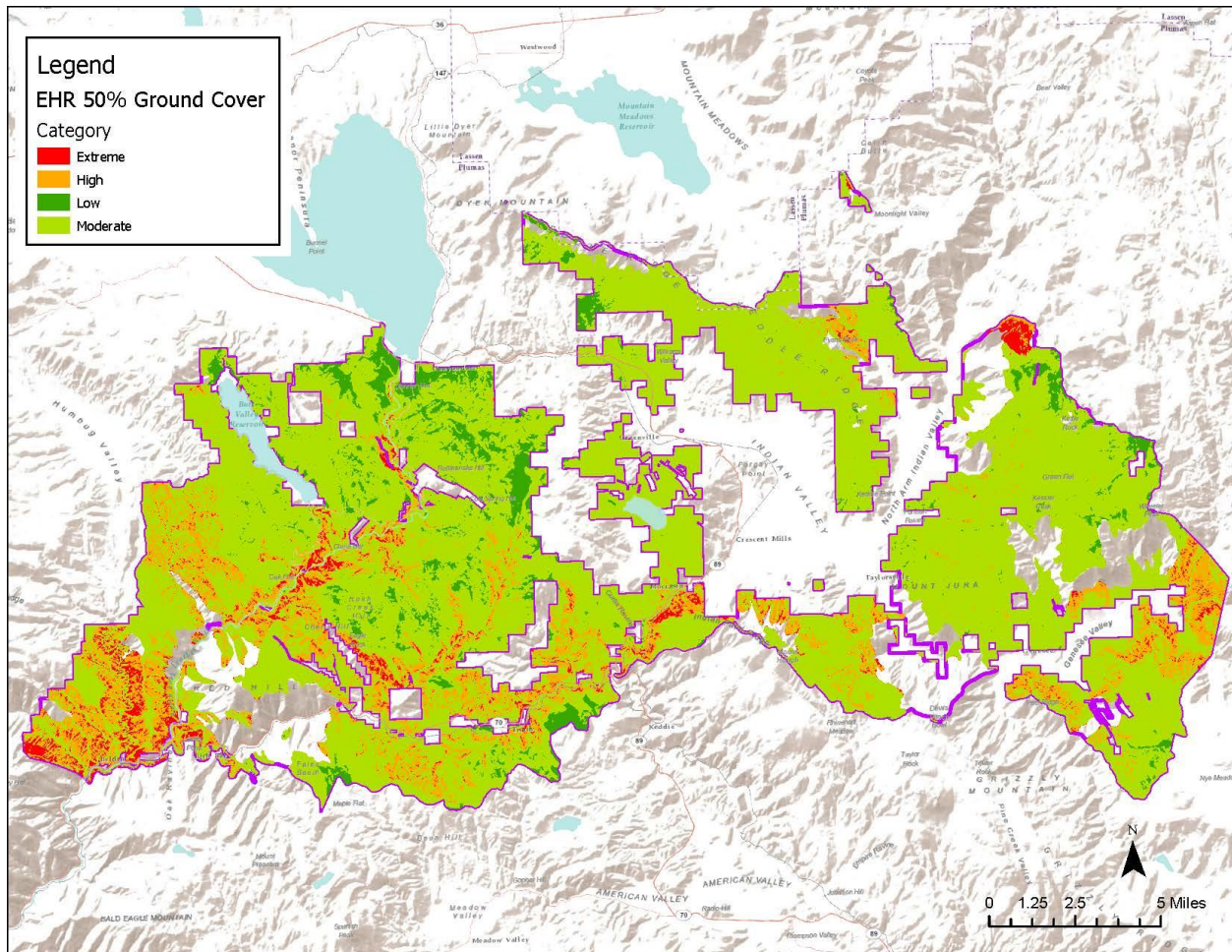


Figure 7: Post timber harvest Erosion Hazard Rating (EHR) for the project area. Model assumes 50% effective ground cover remains post-harvest.

On steep slopes, equipment maneuverability is reduced due to increased risk of vehicle roll-over and skid trails are more likely to be oriented along the fall line rather than sidehill. As a result, there may be more concentrated use on skid trails, potentially more skid trails per acre, and less overland traffic between skid trails. Skid trails can have a direct effect on soil cover and porosity; increases in the amount of soil compaction can result in reduced infiltration and increases in erosion potential. Coarse rock fragments near the soil surface help to reduce compaction hazard and provide some soil cover. Ensuring that water bars are installed correctly will be pertinent to limiting indirect effects. Landings and temporary roads will be subsoiled to alleviate soil compaction concerns.

Full bench skid trails are one way to facilitate skidding material on the contour of a steep slope. This technique involves cutting into the hillside to create a relatively flat surface that is safe to drive on. In addition to displacing an extensive amount of topsoil, full bench skids also disrupt hillslope hydrologic function and remain as a permanent feature on the landscape.

Full bench skid trails may be constructed on a case-by-case basis, with consultation by watershed staff prior to implementation. Recontouring these benches and adding fine organic matter may be necessary once harvest activities are complete.

Reforestation Treatments

Reforestation treatments include the application of herbicides. Alternative 1 proposes ground-based applications of herbicides across 26,874 acres of reforestation treatment areas. The following sections discuss the potential direct and indirect effects of these treatments and their proposed mitigation measures.

The proposed herbicide application has been designed to avoid conditions that may trigger high runoff events by requiring implementation during the dry season. Herbicide applications would cease when weather conditions exceed those on the label and/or when the National Weather Service forecasts a greater than 70 percent probability of precipitation. Additional project design features and standard management requirements for watershed protection have been established that requires leaving an untreated strip of land and vegetation alongside surface waters, wetlands, riparian areas (national best management practice Chem-3). Strip widths established by the interdisciplinary team are presented as project-specific project design features. These untreated buffers would act as a sink and filter if sediments and/or herbicides accidentally get carried via runoff.

Potential for offsite transport of herbicides is variable as reflected by characteristics summarized in Table 26. Additional best management practices and project design features would effectively diminish the possibility of off-site transport via runoff and limit herbicides from entering surface waters through overland flow. Project design features related to ground cover requirements and organic matter would support the persistence of microbial activity, which expedites the breakdown of herbicides. Therefore, the proposed treatments with chemicals and their metabolites are not expected to accumulate or negatively affect water quality in the project area or downstream.

Table 26: Characteristics and leaching potential for proposed herbicides

Herbicide (Active Ingredient)	Soil Persistence (Half-life in days)	Water Persistence (Half-life in days)	Leaching Potential
Aminopyralid	35	127 – 447	Limited, but may leach into groundwater if there are permeable soils and shallow water table.
Chlorsulfuron	40	60	Weakly adsorbs to soils, considered to have high leaching potential.
Clopyralid	40	8-40	High leaching potential, especially in sandy soils and areas with high water tables
Glyphosate	47 (no soil activity)	4 – 11	Very low as herbicide has high adsorptive capacity

Herbicide (Active Ingredient)	Soil Persistence (Half-life in days)	Water Persistence (Half-life in days)	Leaching Potential
Imazapyr	25 – 142 (soil type)	2 – 730 (avg 40)	Low potential for leaching, but is susceptible to surface runoff, and leaching from dead roots may occur
Triclopyr	10 – 46 (avg 30)	0.5 – 426 (conditions)	Not considered to have high potential for surface or groundwater contamination
Indaziflam	36-178 (laboratory conditions)	5-200 (Dependent on sunlight exposure)	Parent compounds and degradants have moderate to high potential to leach through the soil column.

Road Improvements and Decommission/Obliteration

Many system road improvements to benefit water quality have been identified in project planning. During project planning, 34 road locations were identified for water quality improvements; treatments identified include culvert cleaning, road resurfacing, road drainage feature installation, and replacing undersized culverts (See Hydrology Specialist report for more detail). Additional road work may occur, as needed, to address any newly discovered deficiencies.

Cumulative Effects

Under the Proposed Action, seventeen of twenty analysis watersheds are over the threshold of concern (TOC) (Figure 8). The TOC serves as a yellow flag indicator of elevated risk for that watershed and warrants further consideration.

Under the analysis scenario, all project treatments were assumed to be implemented in 2024. Besides simplifying modeling, this approach has the benefit of providing an overestimate of effects, which can credibly serve as a conservative, worst-case scenario for analysis. In a real-world situation, actions are often completed over a decade or more. Under the most aggressive treatment scenario, natural recovery rates are projected to bring project watersheds back to below TOC by 2035. Given that the current (pre-project) level of cumulative watershed effects (CWE) risk is low in most watersheds it is unlikely that the TOC will be exceeded in any of the analysis watersheds under a more realistic implementation schedule of five to ten years.

Field reconnaissance of the project area showed the project area largely contains a network of functional riparian corridors capable of tolerating the elevated risk highlighted by the model results. Stream channels are in relatively stable condition with plenty of riparian vegetation and rock armored banks. Legacy soil impacts from past land management activities (e.g., displacement, erosion, and compaction) were observed to be minimal or absent within these watersheds, and potential impacts of the proposed action are expected to be minimal due to the design features that are part of the proposed action.

Effects from recent high-severity wildfire such as reduced ground and canopy cover are observable in project watersheds, and mechanical treatment units are proposed on steep-slopes within these watersheds. Factors such as soil type, slope, erosion hazard, and ground cover will be assessed during project implementation to determine the suitability for ground-based equipment on steep slopes within these areas. Site-specific management practices and mitigation measures such as water bars, minimum ground cover requirements, and tethered logging systems may be used where appropriate to reduce the cumulative effects of these treatments. Under the project implementation plan, watersheds modeled at high risk of CWEs will be further assessed for on-site conditions by project hydrologists and soil scientists. Additional mitigation measures to avoid creating off-site effects may be developed where needed. When considered in aggregate, the risk of cumulative impacts from the proposed action is determined to be at an acceptable level due to the factors described above.

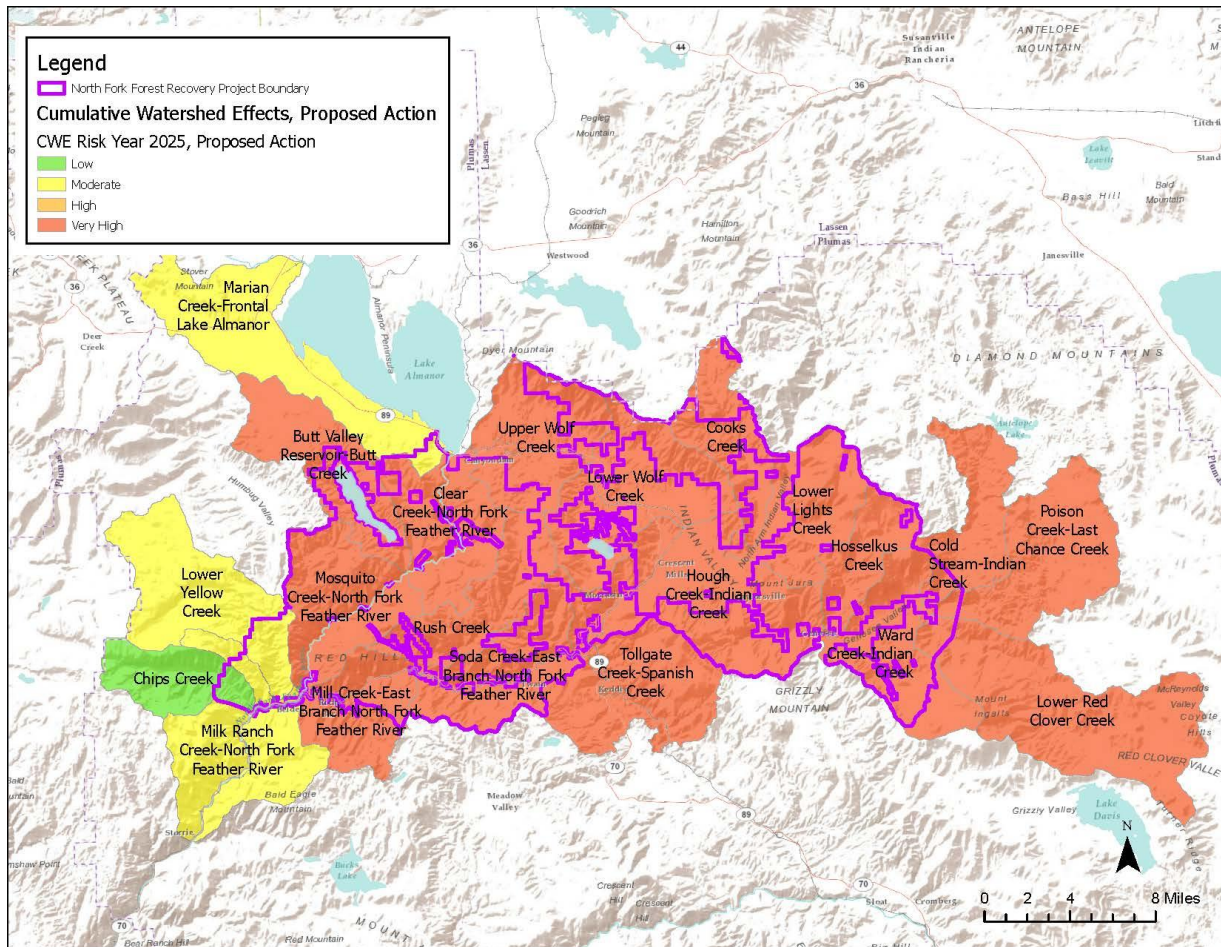


Figure 8: Cumulative Watershed Effects risk across analysis watersheds for the Proposed Action; modeled CWE risk shown for the year 2025. TOC is assumed at 12% for all watersheds.

No Action

Direct, Indirect, and Cumulative Effects

Soil Quality Effects

Under the No Action Alternative, effective soil cover in the form of fine organic matter and large woody debris can be expected to increase as organic materials accumulate on the forest floor; consequently, erosion potential is currently very low in most of the project area and would continue to be so in the absence of a high severity fire.

The extent and degree of soil compaction is expected to decline slowly over time. This process may take several decades in forested environments (Grigal 2000). Root penetration, extension, and decay, along with the burrowing action of soil dwelling animals would contribute to an increase in soil porosity and decrease compaction.

Water Quality Effects

Under the No Action Alternative, Equivalent Roaded Area (ERA) values would slowly decline to a baseline level over time. Surface, ladder, and crown fuels would not be treated on upslope areas or in riparian conservation areas (RCAs). Fuel treatment activities would not occur, leaving sub-watersheds at a greater risk of wildfire. A future severe wildfire could greatly increase ERA values within and across sub-watersheds.

Mechanical thinning treatments, mechanical fuels treatments and prescribed fire treatments are designed to reduce the likelihood of high intensity wildfire in the treated forest stands. In the event of a severe wildfire in these stands, moderate and high soil burn severities would not only impact soil cover but would also likely generate substantially increased runoff and erosion that would measurably impact water quality in streams within and near the burned area (Neary 2005).

Road drainage improvements and decommissioning activities would not occur under the No Action Alternative. Deferred maintenance issues of the road system, and the absence of treatment for significant erosion and potential erosion sites (SEPES) on roads would continue to pose risks to water quality. Non-system roads and trails, as well as unneeded NFS roads, would not be obliterated or treated, likely leaving untreated erosion sites that impact water quality in nearby streams.

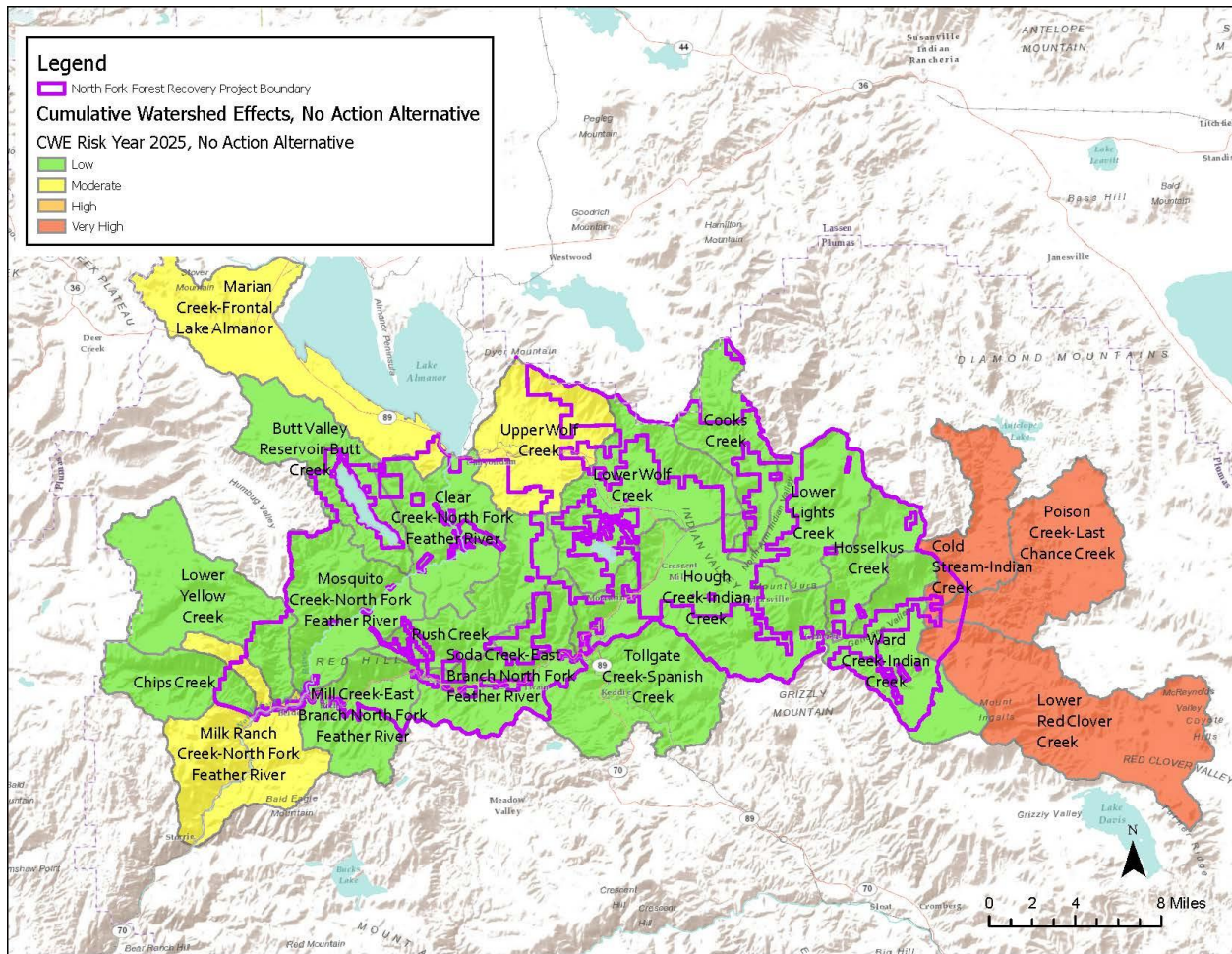


Figure 9: Cumulative Watershed Effects risk across analysis watersheds for the No Action Alternative; modeled CWE risk shown for the year 2025, TOC is assumed at 12% for all watersheds.

Range

The North Fork Forest Recovery Project area overlaps two active cattle grazing allotments (Lights Creek and Jenkins) and one vacant allotment (Taylor Lake). Livestock may be present in the active allotments (generally) from June 1- September 30. The areas where allotments overlap with the project area are relatively steep and not primary grazing areas. There is no critical range infrastructure (fencing and water developments) in the project area.

Six additional allotments on Plumas and Lassen National Forest lands border the project area (Table 27). A map showing the location of all nine grazing allotments is included in the Past, Ongoing, and Foreseeable Future Actions (PORFFA) Report.

Table 27: Grazing allotments within and adjacent to the North Fork Forest Recovery Project

Allotment Name	National Forest	Ranger District	Allotment Status	Total Acres	Project Area Acres
Chips Creek	Lassen	Almanor	Vacant	13,608	Outside project area
Coyote	Lassen	Eagle Lake	Active	4,957	Outside project area
Homer Lake	Lassen	Eagle Lake	Active	8,947	Outside project area
Hungry Creek	Plumas	Mt. Hough	Vacant	17,003	Outside project area
Jenkins	Plumas	Beckwourth	Active	34,039	910
Lights Creek	Plumas	Mt. Hough	Active	29,928	5,486
Soldier Meadows	Lassen	Almanor	Closed	55,339	Outside project area
Taylor Lake	Plumas	Mt. Hough	Vacant	26,919	16,487
West Humbug	Lassen	Almanor	Vacant	24,380	Outside project area

Proposed Action

Direct, Indirect, and Cumulative Effects

The presence of crews and equipment may cause cattle to temporarily disperse from the immediate area during implementation. Cattle dispersal is only expected while activities are underway and in a limited area compared to the size of their allowable use. Grazing permittees within the project area will be notified of the project implementation schedule when established.

Herbicide use for reforestation release or invasive species management may have associated grazing restrictions and require adjusting rotation schedules to accommodate these restrictions. Given the location and size of where allotments overlap with the project area, these necessary adjustments are expected to be insignificant. Appendix E: Herbicides includes a list of grazing restrictions by herbicide. These expected impacts would be short-term and would not result in changes to permitted or authorized numbers or seasons.

Long-term effects may benefit livestock by improving the resiliency of the project area from future wildfires and reducing unpalatable brush that may take over the area if left untreated.

No Action

The proposed actions would not be implemented under the No Action Alternative, but ongoing forest management activities would continue. Hazardous fuels and unpalatable brush would continue to accumulate within and adjacent to grazing allotments, increasing wildfire risk and reducing available forage.

Recreation and Visual Quality

This section summarizes anticipated effects on recreation and visual quality resources.

Proposed Action

Recreation

The North Fork Forest Recovery Project features recreation treatments in the form of trail construction and improvement, and facility improvements throughout the 166,889-acre footprint. Approximately 32 miles of trails are slated for construction. This includes approximately 7 miles of non-motorized trails and 25 miles of motorized trails (open to class 1 e-bikes only). Trail building refers to the design, construction, and maintenance of trails. Trail building actions include but are not limited to clearing vegetation through mechanical or manual methods, grading, and installation of culverts, waterbars, and signage and route markers. Proposed facility improvements would include utilities (water, electrical) host sites, shower facilities, additional parking capacity, improved paved camping spurs, and upgraded restrooms. Greenville Campground updates would develop an underutilized recreation facility into a prime economic opportunity in the Indian Valley area.

Within the project area there are multiple recreation opportunities, including non-motorized single track, multi-use trails, campground infrastructure, and eligible Wild and Scenic Rivers with outstanding recreational value. The single-track trails in the project area are popular with mountain bikers, hikers, and equestrians. The proposed trail construction will feature a 5-8% grade which is supportive of multiple user types and provides resilience for the substrate. The multiple use trails proposed for construction include the non-motorized Taylorsville trail, the motorized Mt. Jura trail, the motorized Greenville to Round Valley trail, and the motorized Greenville to Long Valley trail. All proposed motorized trails in the project will be open to class 1 e-bikes only, in addition to non-motorized uses. An additional trail circuit of less than a mile in length will be located near the Greenville Campground where an antiquated motorized trail will transition to non-motorized. This trail is of significant interest to Greenville Indian Rancheria and may feature interpretive signage. The overall system sees significant use from visitors in both local and regional communities and provides valuable health and wellness capacity as well as increased tourism revenue for rural economic development. Additionally, trail location and type were collaboratively identified through engagement with representatives from Greenville Indian Rancheria of the Mountain Maidu community to ensure culturally significant areas are protected.

As directed in the Plumas National Forest Land and Resource Management Plan, all forests should be managed in accordance with Recreation Opportunity Spectrum designations and

the adopted Visual Quality Objectives (USDA FS 1988). Recreation Opportunity Spectrum (ROS) is a classification tool developed to classify and monitor existing and desired recreation settings and is a primary tool for providing recreation input to forest planning.

The ROS helps to define and manage what high-quality recreation should look like in a given area of the forest. The ROS also provides a framework for defining types of outdoor recreation environment, activities, and opportunities. ROS classes within the North Fork Forest Recovery Project area are Semi-Primitive, Roaded Modified, Roaded Natural and Rural. Proposed trail construction will not interfere with the many acres of Primitive areas that exist in the Plumas National Forest.

Visual Quality Objectives

Scenery is an important natural resource of the Plumas National Forest. Natural features including vegetation, water, landforms, and geology largely influence the scenery. High-quality scenery enhances people's lives and benefits communities and society. Sightseeing and driving for pleasure are among the nation's leading recreational activities, and demand for them will continue, both on the Plumas and nationally.

The 1988 Forest Plan utilized the Forest Service Visual Management System to determine visual quality objectives for the National Forest System lands within Plumas National Forest (USDA FS 1988). The system involves classifying the variety class of landscapes (considering such things as landforms, vegetation, lakes, and streams), the distance zone, and determining sensitivity levels (considers travel routes, use areas and water bodies). By combining the variety class, distance zone, and sensitivity level, the visual quality objective (VQO) for areas of land can be assigned.

VQOs provide objectives and measurable standards. The five criteria include: Preservation, Retention, Partial Retention, Modification, and Maximum Modification. They are used to describe the degree of alteration that may occur to the visual resource on lands within the Plumas National Forest management areas. The visual character of the NFFRP changed significantly during the 2021 Dixie Fire. The proposed trail construction routes seek to balance both the aesthetic quality of nature combined with feasibility for creation and management. Therefore, no trails are slated for the Preservation VQO and will exclusively take place within areas designated for Retention, Partial Retention, and Modification. Project design features (VQO-1 and VQO-2) include specifications for stump height and burn piles in proximity to trails and primary roads in Retention Zones, to retain a naturally appearing landscape.

Direct and Indirect Effects

The affected environment includes all trails, campgrounds, and recreation facilities within the project boundary. The proposed action would implement fuel reduction through vegetation treatments or prescribed burning throughout the project, including those adjacent to the trail and recreation system. The proposed action would not change the current Recreation Opportunity Spectrum designations, and trails would be maintained as per the design features included within this environmental assessment. Project design features (PCT-1 through PCT-5) will reduce project-related visual impacts for hikers along the Pacific Crest Trail, and any necessary trail closures will be communicated with the Pacific Crest Trail Association.

Trail construction itself will feature a combination of hand and mechanical work to establish the trail corridor. Trail width and height will adhere to Trail Management Objectives so as to minimize damage to soil, watershed, vegetation, wildlife and other forest resources. Potential Effect Indicators have been identified to assess such criteria for each proposed trail and will serve as a monitoring framework for environmental outcomes.

Trails and recreation areas in the project have the potential to be affected by the proposed activities. Fuel treatment activities that will result in slash and piles will be evident, though design features limit the proximity piles may be placed in relation to trails. Smoke from prescribed fire or pile burning, and noise associated with logging and mechanical equipment could have an indirect effect on user desirability, but particulate matter will be regulated by the air quality board and thus will not reach unhealthy levels. Work near trails would require trail closures, but per the design features, implementation would be limited to shoulder seasons to not disrupt times of high visitation. Compared to the long-term closure of recreation areas during a wildfire, disturbance from proposed project activities will be less disruptive, especially as treatment sequencing will be dispersed across the project area and will occur over multiple years.

Cumulative Effects

Cumulative impacts could include the amplification of short-term inconveniences to users when project activities are added to ongoing and routine recreation maintenance activities. In the long term, project implementation activities would maintain and restore the recreation settings valued by the public. While fuels reduction work may further open up the canopy and create greater site lines, this work will also close unauthorized routes currently causing resource damage from OHV use off designated routes.

Past projects on the Mount Hough District (e.g., the establishment of the South Park and Mt. Hough Trail Systems, and the associated Cascade Day Use Area) have contributed to an

increase in use and increasing impacts to the landscape, including unauthorized motorized routes, sanitation impacts near trailheads, and increased traffic along rural routes. However, trail development in the Mount Hough Ranger District and Indian Valley area will support a broader and more integrated trail network within the project area in the future, which is especially important in revitalizing the economy and restoring visitation to the area after the Dixie Fire.

No Action

The proposed treatments would not be implemented under the No Action Alternative. No trail construction or maintenance would take place, nor would campgrounds or other facilities receive improvements.

Direct, Indirect and Cumulative Effects

Under the No Action Alternative, the existing trail system and facility infrastructure would remain unchanged. Tourism volume and local economic revenue would likely remain stagnant or decline over time as visitors seek recreational opportunities with greater accommodation in both trail networks and supporting facilities. In turn, a decrease in outdoor recreation across Plumas County may result in a lack of incentive for future forest management to provide such services or upgrades, further reducing the connectivity of the recreation landscape in the area.

Finally, the Dixie Fire of 2021 provides a stark reminder of the ecological, social, and economic toll that catastrophic wildfires exact on communities and landscapes. By not addressing the current state of post-fire fuel loading and network of non-system routes, the project area is at increased risk of future wildfire and recreation closures in areas with fire-killed trees. By not providing any new recreational opportunities or facilities improvements, the No Action Alternative would maintain the post-Dixie Fire status quo of reduced visual quality and safety, missing the opportunity to complement the local rebuilding efforts that have taken place since 2021.

Silviculture

This section describes compliance with relevant laws, regulation, and policy and summarizes the effects of the Proposed Action and No Action alternatives on silvicultural resources.

Descriptive metrics for the expected direct, indirect, and cumulative effects in the comparative analysis include California Wildlife Habitat Relationship (CWHR) type, size, and density classes; stand density index (SDI); basal area (BA); trees per acre (TPA); and quadratic mean diameter (QMD).

The Silviculture Report, included in the project record, provides more detail on methods and results.

Relevant Laws, Regulations, and Policy

This project is consistent with all timber and vegetation standards and guidelines described in the 1988 PNF Land and Resource Management Plan (LRMP), as amended by the 2004 Sierra Nevada Forest Plan Amendment (SNFPA).

The project has also been designed to comply with the following laws, regulations, and policy:

Healthy Forests Restoration Act of 2003

The Healthy Forests Restoration Act of 2003 (HFRA) aims to reduce the risk of wildfires, improve forest health, and restore forest ecosystems, particularly in fire-prone areas. Signed into law on December 3, 2003, the HFRA outlines several key goals for forest management, with an emphasis on reducing hazardous fuels, improving forest health, and enhancing fire resilience, while balancing environmental preservation.

The HFRA is particularly relevant to old-growth stands and the retention of large trees, as outlined in Section 102(e) of the Act. This section mandates that the Forest Service work to:

- "Fully maintain or contribute toward the restoration of the structure and composition of old-growth stands according to the pre-fire suppression old-growth conditions characteristic of the forest type."

In the context of the Sierra Nevada Forest Plan Amendment (SNFPA) Record of Decision (ROD) in 2004, which integrates the Healthy Forests Restoration Act, forest management practices must carefully consider the preservation of old-growth ecosystems.

National Forest Management Act of 1976

The National Forest Management Act (NFMA) of 1976 set forth requirements for resource management to be met in the National Forests. These are described in the 1982 Rule Provisions, National Forest System Land and Resource Management Planning, Section 219.27. Those pertaining to the vegetation resource include the following:

- Prescribed treatments proposed for harvest are designed to conserve soil and water resources and not allow significant or permanent impairment of the productivity of the land.
- Consistent with the relative resource values involved, prevent or reduce serious, long-lasting hazards and damage from pest organisms, utilizing principles of integrated pest management. Under this approach all aspects of a pest-host system should be

weighed to determine situation-specific prescriptions which may utilize a combination of techniques including, as appropriate, natural controls, harvesting, use of resistant species, maintenance of diversity, removal of damaged trees, and judicious use of pesticides. The basic principle in the choice of strategy is that, in the long term, it be ecologically acceptable and compatible with the forest ecosystem and the multiple use objectives of the plan.

- Management prescriptions are to minimize serious or long-lasting hazards from flood, wind, wildfire, erosion, or other natural physical forces.
- Management activities throughout the project area will focus on meeting healthy forest criteria, including those areas that are classified as not suited for timber production (pursuant to Sec. 219.14), which enables salvage activities and activities necessary to protect other multiple-use values and/or to achieve activities that meet other objectives on such lands if the forest plan establishes that such actions are appropriate.
- Prescribed treatments proposed for harvest include measures for preventing the destruction or adverse modification of critical habitat for threatened and endangered species.
- Cultural treatments such as thinning, weeding, and other partial cutting may be included in the forest plan where they are intended to increase the rate of growth of remaining trees, favor commercially valuable tree species, favor species or age classes which are most valuable for wildlife, or achieve other multiple-use objectives.

Multiple-Use Sustained Yield Act of 1960

The Multiple Use Sustained Yield Act of 1960 is a U.S. law aimed at managing national forests to ensure that they are used for multiple purposes while maintaining their sustainability. The act mandates that the U.S. Forest Service balance various uses of forest resources, such as recreation, timber production, watershed protection, and wildlife habitat, without compromising the health of the ecosystem. The goal is to provide a sustained yield of resources in perpetuity for ongoing periodic outputs of forest products and services.

Other Laws, Regulations, and Policy

Forest plans and amendments comply with the Organic Administration Act of 1897 (at 16 U.S.C. 475, 551), Weeks Law of 1911, as amended (at 16 U.S.C. 515, 552), Knutson-Vandenberg Act of 1930 (16 U.S.C. at 576b), Sikes Act (Fish and Wildlife Conservation) of September 15, 1960 (16 U.S.C. at 670g), Endangered Species Act of 1973 (P.L. 93-205, 87 Stat. 884; 16 U.S.C. 1531-1544, as amended), Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974, as amended by National Forest Management Act (NFMA) of 1976 (16 U.S.C. 1600-1614, 472a), and the Code of Federal Regulations under Title 36, Chapter II, Parts 200-299.

Proposed Action

The North Fork Forest Recovery Project proposes a suite of vegetation management activities to reduce hazardous fuel loads and restore forest stand resiliency to disturbances such as wildfire, drought, and pests. These management activities include variable-density thinning, fuels reduction, prescribed fire, and reforestation and are essential for realigning fire-excluded forest conditions and enhancing ecosystem resilience as both natural systems and human communities adapt to increasing climate-driven disturbances (Hagmann et al. 2022). The Dixie Fire reduced some stand densities and surface fuels, but further action is needed to restore stand conditions that can withstand future disturbances. Post-fire fuels reduction is also needed to reduce hazardous fuel loads that remain across the landscape.

Direct and Indirect Effects

The Proposed Action would increase the average tree diameter within unburned (green) stands while maintaining structural complexity. Thinning would reduce competition for soil moisture and nutrients and allow existing healthy trees of all size classes to grow faster and become more resistant to drought and pests. Recent experimental research confirms that combining thinning and prescribed burning can significantly reduce crown fire behavior and tree mortality, even under severe fire weather conditions. Thin-and-burn treatments provide the greatest mitigation benefits across multiple fire severity metrics (Brodie et al. 2023).

Variable-density thinning would create openings in the forest canopy that disrupt the canopy continuity, decreasing the risk of crown fire and promoting the growth of shade-intolerant, fire-resistant species due to increased sunlight and growing space. Regeneration in open areas would contribute to size class diversity without creating ladder fuels.

Variable-density thinning activities are designed to improve individual tree vigor and overall stand conditions to resist environmental perturbations, including insect and disease infestations and wildfires. Proposed treatments would decrease the risk for widespread tree mortality, especially in the larger diameter (e.g., greater than 20 inches DBH) mature and remnant conifers older than the general age of the dominant and co-dominant trees in the stand. Healthy trees are more capable of fending off beetle attacks by secreting sap and stopping an otherwise destructive attack. Thinning will enable the larger trees in the forest stands to increase in diameter and height more rapidly, not only due to reduced light competition but also by improving the soil moisture availability to these trees.

Some green forested stands proposed for treatment experienced low to moderate mortality from the Dixie Fire. Thinning activities in these stands will continue to move them toward a

more resilient structure that could enable the use of prescribed fire as a landscape management tool.

Mature and Old-Growth Forests

Recent management direction for mature and old-growth forests on the PNF are described under the 1988 PNF Land and Resource Management Plan (LRMP), as amended by the 2004 Sierra Nevada Forest Plan Amendment Narrative frameworks and working definitions for mature and old-growth forests defined in FS-1215a are provided below.

Narrative Frameworks

Old-growth forests are dynamic systems distinguished by old trees and related structural attributes. Old growth encompasses the later stages of stand development that typically differ from earlier stages in a variety of characteristics, which may include tree size, accumulations of large dead woody material, number of canopy layers, species composition, and ecosystem function (USDA Forest Service 1989). In addition to their ecological attributes, old-growth forests are distinguished by their ecosystem services and social, cultural, and economic values. Old-growth forests have place-based meanings tied to cultural identity and heritage; local economies and ways of life; traditional and subsistence uses; aesthetic, spiritual, and recreational experiences; and Tribal and Indigenous histories, cultures, and practices. Dialogue with stakeholders and Tribal Nations and integration of local and Indigenous Knowledge⁹ with evolving scientific understanding are critical in identifying and stewarding old-growth forests.

Mature forests are delineated ecologically as the stage of forest development immediately before old growth. Mature forests exhibit structural characteristics that are lacking in earlier stages of forest development and may contain some but not all the structural attributes in old-growth forests. The mature stage of stand development generally begins when a forest stand moves beyond self-thinning, starts to diversify in height and structure, and/or the understory begins to reinitiate. Structural characteristics that mark the transition from an immature to mature forest are unique to each forest type. Characteristics may include but are not limited to abundance of large trees, large tree stem diameter, stem diameter diversity, horizontal canopy openings or patchiness, aboveground biomass accumulation, stand height, presence of standing and/or downed boles, vertical canopy layers, or a combination of these attributes. Mature forests vary widely in character with age, geographic location, climate, site productivity, and characteristic disturbance regime. The social, cultural, and economic values ascribed to these forests also vary widely. Dialogue with stakeholders and Tribal Nations and

⁹ Indigenous Knowledge is a body of observations, oral and written knowledge, innovations, practices, and beliefs developed by Tribes and Indigenous Peoples through interaction and experience with the environment.

integration of local and Indigenous Knowledge with evolving scientific understanding are critical in effectively managing mature forests.

Working definitions

The working definitions for old-growth and mature forests include quantitative measurement criteria reflecting structural characteristics that fit within the umbrella of both narrative frameworks and are tailored to regional vegetation types and ecological conditions. Regional working definitions for old-growth and mature forest types found within the project area are presented in Table 28 and Table 29.

Table 28: Old-growth types, FIA forest type codes, and minimum criteria for old-growth status within the project area

R5 Vegetation Type Name	FIA forest type code	Site	Minimum diameter (inches)	Minimum trees per acre	Minimum stand age (years)
Conifer Mixed Forests	371	Productive	39	6	188
Conifer Mixed Forests	371	Low	29	5	256
White Fir (not NWFP)	261	Productive	39	6	143
White Fir (not NWFP)	261	Low	29	8	239
Red Fir	262	Productive	30	8	150
Red Fir	262	Low	36	5	200
Jeffrey Pine	225	Productive	30	3	150
Jeffrey Pine	225	Low	30	1	200
Lodgepole Pine	281	Productive	36	7	150
Lodgepole Pine	281	Low	36	4	200
Interior Ponderosa Pine	221	Productive	21	19	150
Interior Ponderosa Pine	221	Low	21	16	200

Table 29: Working definitions for mature forest as applied to FIA data for forest types found within the project area

Mature vegetation class	Walkdown	Indicators	Correlation	Threshold	Weight	Old-growth regional vegetation types
Region 5 Jeffrey Pine	0.83	QMDdom ¹⁰	0.52	10.3	0.52	R5 Jeffrey Pine
		ddiscor ¹¹	0.25	30.8	0.25	
		HTsd ¹²	0.23	31.5	0.23	
Region 5 Mixed Conifer	0.75	QMDdom	0.41	13.1	0.6	R5 Conifer Mixed Forests; R5 Interior Ponderosa Pine; R5 Lodgepole Pine; R5 Mixed Subalpine
		ddiscor	0.27	42.1	0.4	

¹⁰ QMDdom: Quadratic mean diameter of all dominant and codominant trees (in)

¹¹ ddiscor: Diameter diversity index. DDI is a measure of the structural diversity of a forest stand, based on tree densities in different DBH classes.

¹² HTsd: Standard deviation of height of all trees (TPA-weighted) (ft)

Mature vegetation class	Walkdown	Indicators	Correlation	Threshold	Weight	Old-growth regional vegetation types
						(Western White Pine Association), R5 Mixed Subalpine (Mountain Hemlock Association)
Region 5 Red Fir	0.79	ddiscore	0.52	48.3	0.32	R5 Red Fir
		QMDdom	0.46	18.1	0.28	
		HTquart ¹³	0.38	66.2	0.23	
		HTsd	0.28	43.6	0.17	
Region 5 White Fir	0.79	ddiscore	0.4	47.5	0.31	R5 White Fir
		HTquart	0.4	68.5	0.31	
		badom ¹⁴	0.27	150	0.21	
		snagbatot ¹⁵	0.2	24.9	0.16	

Mature and old-growth forest inventory status

Identification of mature and old-growth stands within the project area requires data on stand age and structural indicator variables which were not available at the time of this analysis. These data will be collected during pre-implementation surveys, and stands meeting the criteria established in the working definitions above will be subject to additional review before actions may be taken.

The Plumas National Forest is in the process of mapping old-growth stands across the Forest. This map will serve as the definitive reference on PNF old-growth forests for PNF staff.

Protection measures

As described above, mature and old-growth forests must be identified prior to implementation and are subject to additional administrative review. Where mature and old-growth stands are identified, treatments will be designed to protect and enhance the defining stand characteristics outlined in the mature and old-growth narrative frameworks above and will be consistent with current management direction.

In addition to this process, the North Fork Forest Recovery Project includes measures aimed at protecting and promoting the development of mature and old-growth stands. These measures include canopy cover restrictions related to California spotted owl habitat conservation and the exclusion of protected owl habitat from the proposed upper diameter limit Forest Plan amendment. These measures have been designed to maintain and promote

¹³ HTquart: Mean height of tallest 25% of trees (TPA-weighted) (ft)

¹⁴ badom: Total basal area of dominant or codominant live trees ≥1-inch DBH (ft²/ac)

¹⁵ snagbatot: Total basal area of standing dead trees (ft²/ac)

the establishment of late-seral habitat (CWHR classes 4M, 4D, 5M, and 5D). As described in the following section and in the Silviculture Report, the Proposed Action is expected to increase stand QMDs relative to the No Action alternative.

Unburned Stands

Management activities would occur on approximately 36,000 acres where forested stands were not substantially impacted by the Dixie Fire. The focus of the management activities will be within the CWHR Size Classes 3, 4, and 5 and CWHR Density Classes M and D. Harvest activities will employ mechanical equipment where appropriate and hand thinning in other areas, such as steep slopes or sensitive areas. Sensitive areas include but are not limited to riparian conservation areas, meadow ecosystems, and California spotted owl habitat. Stands identified for mechanical thinning are of gentle slopes less than 35 percent. Consultation with district hydrologists and soil scientists will take place when thinning on slopes greater than 35% to mitigate sedimentation and erosion. Harvesting of trees reduces ladder fuels and increases horizontal space between the trees. Where harvesting occurs, standing dead trees will be retained at varying levels to sustain the ecological role of dead trees (snags).

In accordance with project-specific Forest Plan Amendment STD-PROJ-1B and design feature CSO/AGOS-8, outside American goshawk PACs, California spotted owl PACs, California spotted owl HRCAs, and mature forest habitat (CWHR types 4M, 4D, 5M, 5D, and 6) within CSO territories, live conifer trees greater than 30 inches DBH will be retained except in the case of imminent threat to life and property, or if one of the conditions below is met:

- a) When required for equipment operability, individual trees less than 35 inches DBH may be removed on an incidental basis.
- b) Outside of California spotted owl territories and where necessary to move towards vegetation desired conditions, live trees greater than 30 inches but less than 40 inches DBH may be felled to create coarse woody debris (where it's lacking), or removed, under the following limited circumstances:
 - When removing trees is needed for aspen, oak, or meadow restoration treatments or for cultural or Tribal importance.
 - In overly-dense stands to favor retention or promote the growth of even larger or older shade-intolerant trees.
 - To improve the growth and vigor of rust-resistant sugar pine trees greater than 16 inches DBH by reducing competition from surrounding trees; or
 - Within homogeneous plantations, to reduce loss of large trees due to competition in overly dense stands.

Design feature CSO/AGOS-8 restricts cutting live conifer trees greater than 30 inches DBH within American goshawk PACs, California spotted owl PACs, California spotted owl HRCAs, and mature forest habitat (CWHR types 4M, 4D, 5M, 5D, and 6) within CSO territories except where needed for equipment operability.

Design feature SILV-7 specifies that no more than 1 shade-intolerant non-true fir species such as Douglas-fir or ponderosa pine greater than 30 inches DBH but less than 40 inches DBH may be removed per 10 acres of commercial thin in the project area (excluding those trees removed for reasons of protecting public safety).

Modeling of proposed treatments was conducted to understand the effects on stands across the project area. Proposed treatments will reduce basal area from approximately 180 square feet per acre to an estimated 135 square feet per acre, averaged across all stands. Basal area changes will vary across the project based on stand type. The average diameter of stands is expected to increase from 19 inches to 22 inches QMD immediately following treatment and increase to 24 inches by 2044. By thinning smaller trees, reducing ladder fuels, and retaining large trees, treatments have been designed to reduce stand density and trees per acre while increasing the QMD and minimizing impacts to basal area (Figure 10).

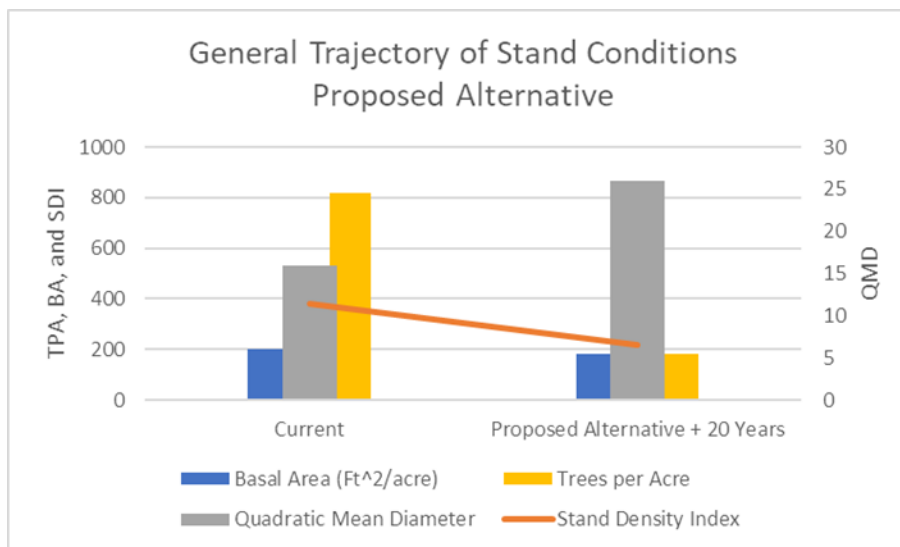


Figure 10: Current and projected density and size metrics under the Proposed Action

Desired post-treatment stand densities are 25% to 35% of the maximum SDI outside specified areas (e.g., California spotted owl habitat). Model projections of stand growth following the silviculture activities indicate stand density would remain below 60% of the maximum SDI for the next 20 years under the Proposed Action. Maintaining stand densities below 60% of the maximum would decrease the risk of disease and insect-related threats, reduce the risk of high-severity wildfires, and minimize the need for additional management actions over this

time. Thinning treatments would meet the management standards and guidelines outlined in the SNFPA p. 50-51. Figure 11 displays the targeted residual stand conditions, in terms of percent maximum of SDI, and the anticipated conditions 20 years after treatment.

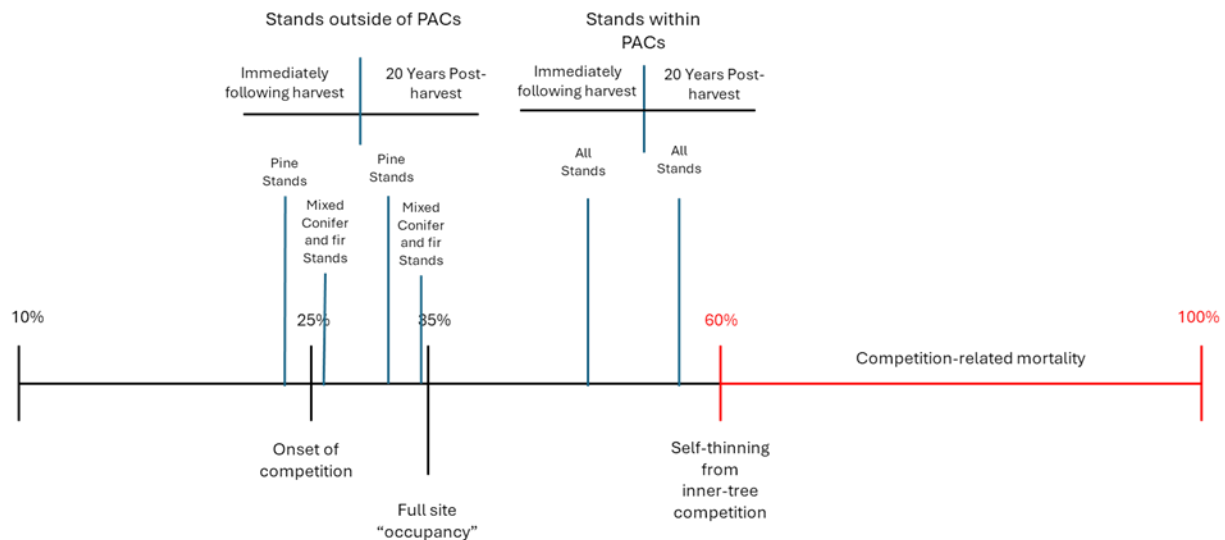


Figure 11: Target residual density levels of stands following harvest, by species type for PAC and non-PAC stands, and projected density levels, in terms of maximum SDI.

Post-treatment stands would generally have larger diameters and less dense canopy cover than existing conditions. Roughly 22% of the forested area would be classified under the CWHR system in size class 5 (medium/large tree), which correlates to mid to late seral conditions. As the Proposed Action is focused on thinning understory trees, treatments are expected to increase QMD values. There is a 34% increase in acres of CWHR size class 5 under the Proposed Action. Size class acreage changes following implementation are shown in Figure 12.

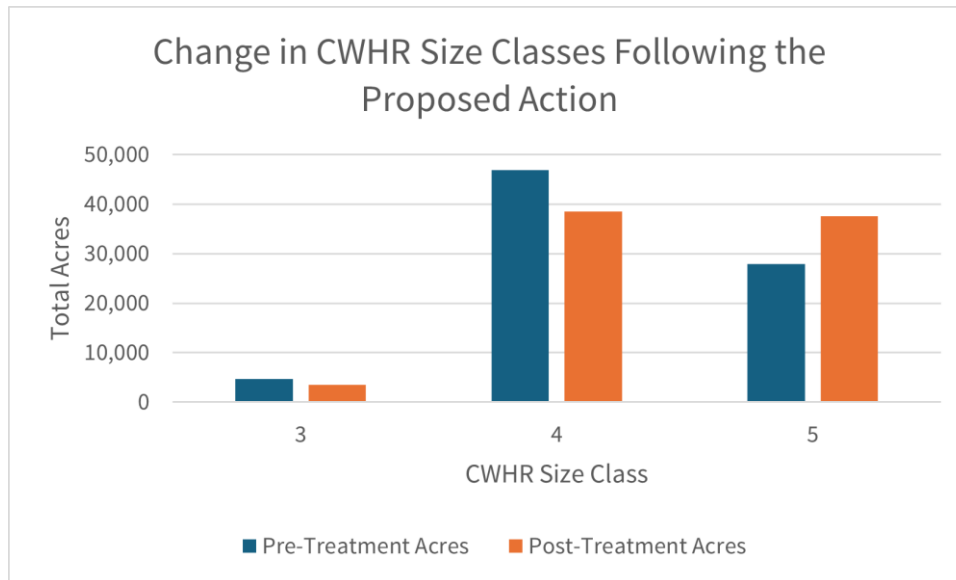


Figure 12: Change in CWHR size classes following the Proposed Action

Table 30 summarizes estimated acres within each CWHR class before and after implementation of the Proposed Action across the entire project area.

Table 30: Pre- and Post-Treatment CWHR Class Distribution

CWHR Class	Pre-Treatment Acres	Post-Treatment Acres	Percent Change
0X	27,679	20,220	-27%
1S	57	46	-20%
1X	59,218	66,688	13%
2D	65	45	-31%
2M	24	24	-1%
2P	66	66	0%
2S	204	204	0%
2X	28	28	0%
3D	809	455	-44%
3M	1,079	344	-68%
3P	2,067	1,904	-8%
3S	760	802	5%
3X	8	8	0%
4D	8,956	4,624	-48%
4M	14,788	10,835	-27%
4P	15,210	14,968	-2%
4S	7,927	8,103	2%
4X	18	18	0%

CWHR Class	Pre-Treatment Acres	Post-Treatment Acres	Percent Change
5D	8,569	7,345	-14%
5M	9,951	13,596	37%
5P	6,327	9,106	44%
5S	3,079	7,462	142%
Total	166,889	166,889	0%

Approximately 36% of forested areas obtain a lower density class in the CWHR classification system following the thinning operations. The rest of the forested areas proposed for treatment also experience a density reduction, but not enough to change the CWHR designation. The modeled post-treatment structural conditions are indicative of the more resilient conditions as compared to the CWHR classes associated with the No Action Alternative. Figure 13 displays the post-treatment acreage change in density class among forested vegetation types. Most forested stands that maintain their density class are in CWHR size class 5 due to mechanical thinning restrictions in designated California spotted owl habitat (PACs, HRCAs, home range areas, and territories). These stands are generally associated with sensitive wildlife habitats and have minimal proposed biomass removal. Actions within size class 5 stands would focus on surface and ladder fuel reduction in the WUI.

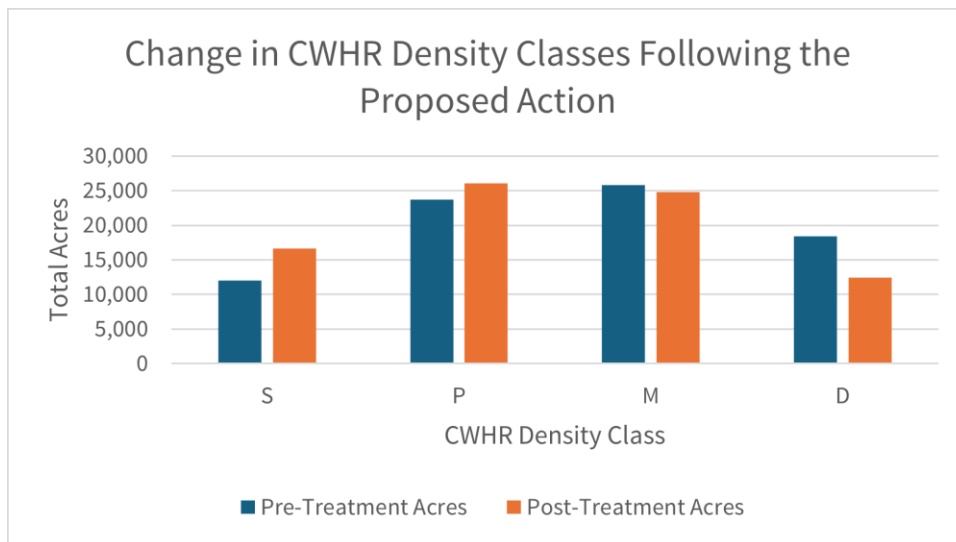


Figure 13: Change in CWHR density classes following the Proposed Action

Burned Stands

Approximately 81,190 forested acres were substantially damaged by high-severity burn in the 2021 Dixie Fire, converting from conifer forest types to shrub-dominated montane chaparral in CWHR size classes 0 and 1. Considerable site preparation is necessary to restore these stands through reforestation or assisted natural regeneration. The damaged stands consist of

standing and lying dead wood in varying densities based on the pre-fire stand condition. Approximately 70 to 80 percent of the dead material will be felled and removed if feasible or disposed of on-site. Some larger dead material (i.e., tree boles greater than 12” diameter), that poses a low wildfire risk, would be retained onsite to provide habitat, sequester carbon, retain soil moisture, and provide microsites for planting.

Treatments will consist of piling and burning, chipping, and broadcasting the chipped material across the site, or removing to a biomass facility for utilization for heat, energy production, biochar, or some other economic use. Decisions for handling dead material will consider logistical constraints, economic opportunities, and environmental impacts, including reducing future high-severity wildfire risk.

Planting will consider the ecological benefits of early successional species by retaining natural areas consisting of shrubs and dead trees. Post-fire logging can reduce seedling recruitment by removing surviving seed sources and disturbing the seedbed. However, the planned mechanical treatments are designed to enhance site conditions without impeding natural regeneration. These treatments will not disrupt the establishment of new seedlings.

To meet the NFMA requirement, artificial reforestation offers a broader selection of tree species and genetic diversity than natural regeneration alone, helping to create a more resilient and ecologically diverse forest structure. However, reforestation will not occur in areas where natural regeneration is already underway. In such cases, allowing natural regeneration to proceed is the most cost-effective and ecologically appropriate solution. Reforestation will only take place in areas with large patches of high-severity burn, where natural regeneration is unlikely due to low cone dispersal rates.

While these mechanical treatments and reforestation efforts are designed to reduce fuel loads and mitigate future fire risks, they will not negatively impact seedling establishment, as long as proper care is taken to avoid disturbing regeneration sites. The balance between reducing fuel accumulation and maintaining adequate microsites for regeneration will be carefully managed to meet both ecological and fire management objectives.

Seedlings would be planted in various patterns across the planting areas from traditional grid spacing to “clusters” to ensure resource availability and minimize competition while promoting early stand heterogeneity. All seedlings planted will be native species and representative of the species mix that preceded the fire, to the extent seedlings are available and appropriate for future climate scenarios.

Reforestation preparation would require partnering with federal, state, and private seed collections to ensure that the seed used for nursery stock is appropriate for the project area

seed zone, with consideration afforded to 500-foot elevation bands and aspect. Consideration for seed stock would consider planting for climate adaptation as well. Seeds would be selected based on matching planting stock with anticipated climate conditions in future decades.

Competing brush would be managed using manual, mechanical, or chemical methods to ensure the planted seedlings can compete for soil moisture early in stand development.

Tree planting would focus on restoring heterogeneity of forest species composition and density, using methods such as cluster planting in microsites with higher water availability. Interspersed between the cluster planting would be low density of regularly spaced seedlings. Prescribed fire would be introduced as a management tool after seedlings have reached a sufficient size.

Cumulative Effects

The cumulative effects analysis is a retrospective assessment of historic management activities that have contributed to existing conditions within the project area. The cumulative effects analysis area considered for silviculture is the project area. Stand and site conditions outside the project area generally have little effect on treated stands, apart from effects on forest insect populations and the risk of fire spread from adjacent untreated stands.

The timeframe for inclusion of management activities is those that have occurred over the past 30 years (since 1994). Silvicultural treatments within this timeframe have improved the health and vigor of thinned stands and resulted in the establishment of plantations and increased conifer regeneration in clearcuts. Past management activities, such as fire suppression, livestock grazing, timber harvest, and tree planting, along with insect and disease perturbations, have influenced the present conditions within the North Fork Project Area. The Past, Ongoing, and Reasonably Foreseeable Future Actions Report for the North Fork Forest Recovery Project (PORFFA) summarizes past, ongoing, and foreseeable future actions within the project area.

No Action

None of the proposed management activities would be implemented under the No Action alternative. Current management strategies and ongoing activities would continue.

Direct, Indirect, and Cumulative Effects

Unburned Stands

Without active intervention, high fuel loads would continue to increase and expose humans and infrastructure to increased wildfire risk. Stand densities in unburned forest would

continue to increase alongside gradual increases in mortality as the percentage of maximum stand density increases. Spotted owl and goshawk habitat would be at substantial risk of being destroyed by wildfire or pests for many years. Figure 14 shows forest vegetation projections within the project area over the next 20 years. The graph displays increases in an already dense canopy cover resulting in reduced cover of shrubs, forbs, and grasses and overall vegetation diversity due to lack of sunlight reaching the forest floor. Stands would remain dense, encouraging ingrowth of shade-tolerant trees, particularly white fir, which would increase the presence of ladder fuels, lower overall canopy base heights, and increase the risk of widespread density-related insect and disease mortality. These factors would increase the risk of more intense fire behavior, exemplified by higher flame lengths, torching from tree crowns and increased mortality of forest vegetation.

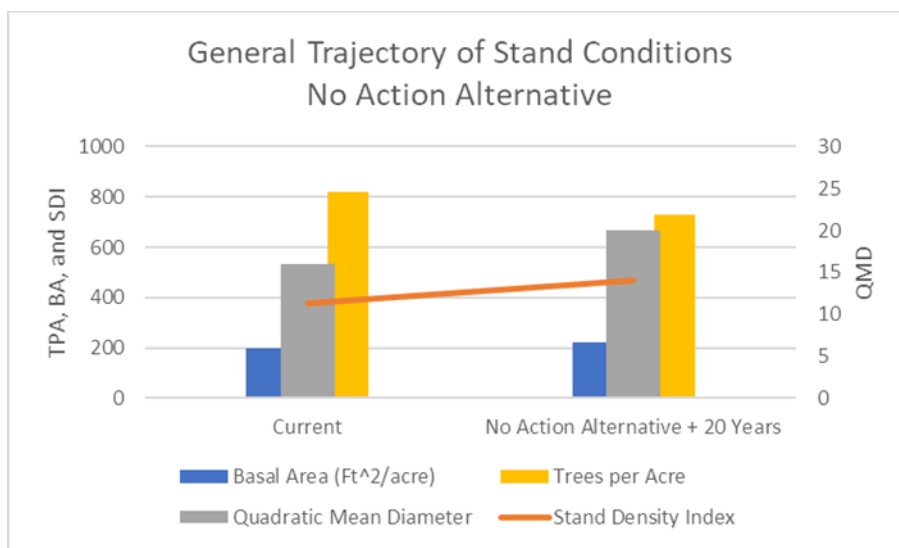


Figure 14: Forest vegetation projections within the project area over the next 20 years.

Burned Stands

Under the No Action alternative, many fire-damaged stands would remain dominated by brush, and conifer forest regeneration would be slow where regeneration occurred at all (Stevens-Rumann and Morgan 2019). The Dixie Fire burned more than 80,000 acres within the project area at high severity. Under a natural fire regime, a fire would burn at varying intensity levels and would have left a heterogeneous mosaic of forest conditions ranging from early successional forest conditions with abundant dead-standing trees to forest conditions that are little affected by the fire disturbance.

The current extent of early seral forest conditions is the result of fire suppression for many years and the related buildup of fuels. Large, homogeneous, landscape-level brush cover has dominated the site and there is little conifer regeneration occurring naturally. Absent active

intervention to reforest these stands, the vegetative cover would be dominated with brush, and regeneration of tree species to full occupancy would be deferred indefinitely. The recruitment of late seral habitat opportunities for California spotted owls and goshawks would not occur for centuries. Much of the damaged area will remain in chaparral with patchy regeneration.

Future wildfire suppression efforts would be more difficult under the No Action Alternative. Excessive flame lengths would prevent direct attack by ground-based equipment and personnel.

Transportation

The North Fork Forest Recovery Project area contains multiple National Forest System (NFS) roads ranging from smooth, gravel-surfaced roads to rough, primitive, and un-surfaced roads. These roads are maintained for public and administrative use, access for permittees and private inholdings, recreation, forest management, fire response, and other uses. There are approximately 387 miles of existing managed NFS roads on PNF lands and 43 miles of other federal, state, local, and private roads within the project area.

Roads outside the project boundary would provide necessary access to treatment units and these roads require routine maintenance. Maintenance or improvement support for these nearby roads may be needed for implementation, but those activities are outside the scope of this analysis and fall within the purview of PNF program management including cooperator agreements, or state or county road programs.

Proposed Action

Direct Effects

There would be short-term increases in traffic on local roadways and access roads to implement the proposed treatments. Increased traffic would include the movement of heavy equipment for mechanical thinning, haul vehicles to remove logs and biomass, and passenger vehicles for transporting personnel. For public safety, temporary road closures would be imposed during periods of roadside vegetation and hazard tree removal, and during road activities.

Design features and best management practices (BMPs) would be incorporated into project design to minimize potential impacts on roads from use and maintenance. These design features and BMPs would also mitigate impacts to other natural and cultural resources. Road maintenance and improvements would improve or eliminate existing road impacts on water

resources and aquatic species, helping to restore hydrologic function. Roadside hazard tree removal would improve safety for workers and the public and prevent traffic obstructions.

Indirect Effects

Some roads may require maintenance and improvements to facilitate implementation and as a result, post-treatment conditions along these roads could be better than existing conditions. Where road conditions improved following implementation, there would likely be an increase in public traffic, making them more desirable routes for recreation and administrative traffic. Improved road conditions could also support safety objectives through safer ingress for emergency services and egress for members of the public.

Roads outside the project area would likely experience surface deterioration from repeated forest product haul if not maintained before, during, and after project implementation. For public safety, temporary road closures would be imposed during periods of roadside vegetation and hazard tree removal, and during road activities.

Cumulative Effects

Past actions have led to the establishment of the existing transportation system, which includes county roads, NFS roads, non-system roads on National Forest lands, and roads located on private lands, many owned and operated by timber management companies. Road improvement work and hazard tree removal along roads have occurred and are occurring in areas adjacent to the project area. These transportation actions, road maintenance, and road-related watershed improvements, coupled with those proposed in this project, would create a more efficient, functional, and safe road system that would provide the necessary access for project implementation, future management, fire suppression, and improved public access. Active management of the official transportation system would improve public access and firefighter safety, minimize adverse environmental effects, and reduce future maintenance costs.

No Action

Direct, Indirect, and Cumulative Effects

Under this alternative, no treatments would be performed and the existing road system within the project area would remain in its current state. There would be no incentive for road maintenance or improvements to support project implementation. The condition of the existing NFS and county roads within the project area would continue to deteriorate and the backlog of deferred maintenance would increase. The use of unauthorized routes within the project area could continue to impact forest resources. Impacts on other forest resources,

especially from road-water interaction, would continue. Access and egress for public and administrative use would become more unreliable and less safe.

Wildlife

This section summarizes the effects of the Proposed Action and No Action alternatives on wildlife. Analysis of the Proposed Action is organized in two sections: (1) Region 5 Forest Service Sensitive Species and federal Endangered Species Act Proposed and Candidate Species, and (2) Federally Listed Threatened and Endangered Species.

The Wildlife Specialist Report, included in the project record, provides more detail on species-specific analyses. The Wildlife Specialist Report includes a Biological Evaluation (BE) that analyzes the potential effects on Region 5 Forest Service Sensitive Species, as well as Management Indicator Species and a migratory bird. Also included in the project record is the Biological Assessment (BA) for Wildlife and Plants.

The BA is a separate document that analyzes potential project effects to plants and animals listed or proposed for listing by the US Fish and Wildlife Service (USFWS) as endangered or threatened under the federal Endangered Species Act (ESA) of 1973 as amended, and federally designated critical habitat for those species. This section incorporates findings from both the Wildlife Specialist Report and BA.

The California spotted owl, proposed for listing as a threatened species under the ESA, is addressed both in the BE and separately in a pre-listing Programmatic Biological Assessment and conferencing with the USFWS.

Tables 31-35 display the known and potential occurrences of all special status species in the project area as well as “Determination of Effects” for each¹⁶. Additional information on these species and why they are or are not analyzed further can be found in the BE and BA in the project record.

Table 31: Invertebrate Species – Summary of Effects Determinations for TES Species in the NFFRP

Species Name	Common Name	Species Status	Report	Determination
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¹⁶ Determinations: USFWS T & E Species: NA = No Affect, MANLAA = May Affect but Is Not Likely to Adversely Affect Individuals or their designated critical habitat, MAILAA = May Affect and Is Likely to Adversely Affect Individuals or their designated critical habitat. Proposed (P) Species: WNA = Will Not Affect, MAINLJCE = May Affect but is Not Likely to Jeopardize the Continued Existence of Individuals, MAILJCE = May Affect but is Likely to Jeopardize the Continued Existence of Individuals Proposed Critical Habitat: WNA = Will Not Affect, NLRDAM = Not Likely to Result in the Destruction or Adverse Modification of their Proposed Critical Habitat, LRDAM = Likely to Result in the Destruction or Adverse Modification of their Proposed Critical Habitat. FS Sensitive Species: WNA = Will Not Affect, MAI = May Affect Individuals, but is not likely to result in a trend toward Federal listing or loss of viability, MAILRTFL = May Affect Individuals, and is Likely to Result in a Trend toward Federal Listing or loss of viability

<i>Bombus occidentalis</i>	Western bumble bee	Forest Service: S	BE	MAI
<i>Danaus plexippus</i>	Monarch butterfly	USFWS: C	BE	MAI

Table 32: Amphibian and Reptile Species – Summary of Effects Determinations for TES Species in the NFFRP

Species Name	Common Name	Species Status	Report	Determination
<i>Rana boylei</i>	Foothill yellow-legged frog	USFWS: T; CDFW: SE	BA	MANLAA
<i>Rana sierrae</i>	Sierra Nevada yellow-legged frog	USFWS: E	BA	MANLAA
<i>Rana draytonii</i>	California red-legged frog	USFWS: T	BA	NA
<i>Actinemys marmorata</i>	Northwestern pond turtle	Forest Service: S, USFWS: PT	BE	MAI

Table 33: Bird Species – Summary of Effects Determinations for TES Species in the NFFRP

Species Name	Common Name	Species Status	Report	Determination
<i>Accipiter atricapillus</i>	American goshawk	Forest Service: S	BE	MAI
<i>Empidonax traillii brewsterii</i>	Willow flycatcher	Forest Service: S, USFWS: BCC, CDFW: ST	BE	MAI
<i>Grus canadensis tabida</i>	Greater sandhill crane	Forest Service: S	BE	WNA
<i>Haliaeetus leucocephalus</i>	Bald eagle	Forest Service: S, USFWS: BCC	BE	MAI
<i>Strix nebulosa</i>	Great gray owl	Forest Service: S	BE	WNA
<i>Strix occidentalis occidentalis</i>	California spotted owl	Forest Service: S & MIS, USFWS: PT, BCC	BE & PBA	MAINLJCE & MANLAA

Table 34: Mammal Species – Summary of Effects Determinations for TES Species in the NFFRP

Species Name	Common Name	Species Status	Report	Determination
<i>Canis lupus</i>	Gray wolf	USFWS: E	BA	MANLAA
<i>Vulpes vulpes necator</i>	Sierra Nevada red fox	Forest Service: S	BE	WNA
<i>Pekania pennanti</i>	Pacific Fisher	Forest Service: S; USFWS: C	BE	MAI
<i>Martes caurina sierra</i>	Sierra marten	Forest Service: S	BE	WNA
<i>Gulo gulo luscus</i>	North American wolverine	USFWS: T, Forest Service: S, CDFW: ST	BE	NA
<i>Antrozous pallidus</i>	Pallid bat	Forest Service: S	BE	MAI
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	Forest Service: S	BE	MAI
<i>Myotis thysanodes</i>	Fringed myotis	Forest Service: S	BE	MAI

Table 35: Fish Species – Summary of Effects Determinations for TES Species in the NFFRP

Species Name	Common Name	Species Status	Report	Determination
<i>Mylopharodon conocephalus</i>	Hardhead	Forest Service: S	BE	MAI

The analysis area for wildlife includes the 166,889-acre project area plus a quarter-mile buffer around the project area and all California spotted owl and American goshawk PACs that intersect the project area.

Proposed Action

Effects on Forest Service Sensitive Species & ESA Proposed and Candidate Species

The Plumas National Forest considered three different categories of federally protected species in the BE: Forest Service sensitive species and ESA proposed and candidate species. Tables 36-40 list these species which occur or could occur on the PNF and summarize the determination of each species. The following section summarizes direct, indirect, and cumulative effects to the species identified as May Effect or Category 3 species as identified in Tables 36-40.

Table 36: Invertebrate Species – Listed, Proposed, Candidate and Sensitive Wildlife Species or their Habitat potentially occurring on the NFFRP and the Determination of Effects

Species Name	Common Name	Species Status	Habitat or Ecosystem Component	Analysis Category *	Determination **
<i>Bombus occidentalis</i>	Western bumble bee	Forest Service: S	Access to flowering plants and abandoned rodent burrows	3	MAI
<i>Danaus plexippus</i>	Monarch butterfly	USFWS: C	Access to flowering plants - especially milkweed	3	MAI

Table 37: Reptile Species – Listed, Proposed, Candidate and Sensitive Wildlife Species or their Habitat potentially occurring on the NFFRP and the Determination of Effects

Species Name	Common Name	Species Status	Habitat or Ecosystem Component	Analysis Category *	Determination **
<i>Actinemys marmorata</i>	Northwestern pond turtle	Forest Service: S, USFWS: PT	Riverine and Lacustrine	3	MAI

Table 38: Bird Species – Listed, Proposed, Candidate and Sensitive Wildlife Species or their Habitat potentially occurring on the NFFRP and the Determination of Effects

Species Name	Common Name	Species Status	Habitat or Ecosystem Component	Analysis Category *	Determination **
<i>Accipiter atricapillus</i>	American goshawk	Forest Service: S	Late seral closed canopy coniferous forest	3	MAI
<i>Empidonax traillii brewsterii</i>	Willow flycatcher	Forest Service: S, USFWS: BCC, CDFW: ST	Late seral closed canopy coniferous forest	3	MAI
<i>Grus canadensis tabida</i>	Greater sandhill crane	Forest Service: S	Riverine and Meadow	3	WNA
<i>Haliaeetus leucocephalus</i>	Bald eagle	Forest Service: S, USFWS: BCC	Open grassland and cropland, shallow lakes, and emergent wetlands	2	MAI

Species Name	Common Name	Species Status	Habitat or Ecosystem Component	Analysis Category *	Determination **
<i>Strix nebulosa</i>	Great gray owl	Forest Service: S	Large trees adjacent to Riverine and Lacustrine	3	WNA
<i>Strix occidentalis occidentalis</i>	California spotted owl	Forest Service: S & MIS, USFWS: PT, BCC	Late seral closed canopy forest adjacent to large wet meadows	1	MAINLJCE & MANLAA

Table 39: Mammal Species – Listed, Proposed, Candidate and Sensitive Wildlife Species or their Habitat potentially occurring on the NFFRP and the Determination of Effects

Species Name	Common Name	Species Status	Habitat or Ecosystem Component	Analysis Category *	Determination **
<i>Pekania pennanti</i>	Pacific Fisher	Forest Service: S; USFWS: C	Late seral closed canopy coniferous forest	3	MAI
<i>Martes caurina sierra</i>	Sierra marten	Forest Service: S	High elevation late seral closed canopy coniferous forest	3	WNA
<i>Gulo gulo luscus</i>	North American wolverine	USFWS: T, Forest Service: S, CDFW: ST	Remote, high elevation, tree-line habitat and areas of deep snowpack	2	NA
<i>Antrozous pallidus</i>	Pallid bat	Forest Service: S	Most common in open, dry habitats with rocky areas (rocky outcrops, cliffs and crevices)	3	MAI
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	Forest Service: S	Mesic habitats	3	MAI
<i>Myotis thysanodes</i>	Fringed myotis	Forest Service: S	Hardwood-conifer open canopy forests	3	MAI

Table 40: Fish Species – Listed, Proposed, Candidate and Sensitive Wildlife Species or their Habitat potentially occurring on the NFFRP and the Determination of Effects

Species Name	Common Name	Species Status	Habitat or Ecosystem Component	Analysis Category*	Determination
<i>Mylopharodon conocephalus</i>	Hardhead	Forest Service: S	Riverine or Lacustrine	3	MAI

*Category 1: Species whose habitat is not in or adjacent to the project area and would not be affected by the project.

Category 2: Species whose habitat is in or adjacent to the project area but would not be either directly or indirectly affected by the project.

Category 3: Species whose habitat would be either directly or indirectly affected by the project.

**Determinations: USFWS T & E Species: NA = No Affect, MANLAA = May Affect but Is Not Likely to Adversely Affect Individuals or their designated critical habitat, MAILAA = May Affect and Is Likely to Adversely Affect Individuals or their designated critical habitat.

Proposed (P) Species: WNA = Will Not Affect, MAINLJCE = May Affect but is Not Likely to Jeopardize the Continued Existence of Individuals, MAILJCE = May Affect but is Likely to Jeopardize the Continued Existence of Individuals.

Proposed Critical Habitat: WNA = Will Not Affect.

FS Sensitive Species: WNA = Will Not Affect, MAI = May Affect Individuals, but is not likely to result in a trend toward Federal listing or loss of viability, MAILRTFL = May Affect Individuals, and is Likely to Result in a Trend toward Federal Listing or loss of viability

Western Bumblebee (*Bombus occidentalis*)

Direct and Indirect Effects

Treatments in the NFFRP would likely provide mid- to long-term benefits to the western bumblebee by enhancing foraging habitat. Thinning conifers encroaching into meadows and overstocked stands adjacent to meadows would increase the diversity and abundance of understory vegetation. There could be short-term indirect effects to this species associated with the loss of flowering plants during ground-disturbing project activities, but these plants quickly recover following treatment. Underburning and thinning treatments would have the potential to kill individuals within nests and smoke could harm individuals. These proposed treatments may also help to mitigate the potential effects of climate change by increasing resiliency and resistance to insect infestation and disease.

Species Determination

The NFFRP Proposed Action may affect individual western bumble bees (MAI) but is not likely to result in a trend toward federal listing or loss of species viability.

Monarch butterfly (*Danaus plexippus*)

Direct and Indirect Effects

Treatments under the Proposed Action would likely provide mid- to long-term benefits to the monarch butterfly by enhancing foraging habitat through increasing the diversity and abundance of meadow and forest understory vegetation. Project actions may cause potential short-term direct and indirect effects to this species by increasing chances of mortality to individuals and loss of flowering plants from thinning and prescribed fire. In addition, prescribed fire treatments and associated smoke may potentially harm individuals. The temporal and spatial distribution of treatments across the project area and specifically designed treatments in land allocations such as Riparian Conservation Areas (RCAs) will retain connectivity of suitable foraging and migrating habitat and mitigate potential impacts of the Proposed Action. In addition, the project is designed to retain key habitat features for the Monarch butterfly, such as the design feature which prohibits any herbicide application to milkweed, the Monarch's larval host plant.

Species Determination

It is our determination that the NFFRP may affect individual monarch butterflies (MAI) but is not likely to result in a trend toward federal listing or loss of species viability.

Northwestern pond turtle (*Actinemys marmorata*)

Direct and Indirect Effects

There are only two observations of Northwestern Pond turtle (NWPT) within the analysis area, both in the Spanish Creek drainage within the East Branch North Fork Feather River. Regardless, there is the possibility that all suitable habitat within the NFFRP area could be occupied. Suitable habitat is limited to the primary drainages, ponds, and lakes within the project; much of this habitat is located on private lands within the project area where activities will not occur. Herbicide application near water bodies has the potential to affect NWPT, the use of design features that restrict herbicide treatment within 107 feet of suitable habitat (for listed amphibians, which includes ponds, lakes, and all intermittent and perennial streams), would reduce the potential for direct and indirect effects to NWPT. Treatments under the Proposed Action would likely provide mid- to long-term benefits to the northwestern pond turtle by enhancing existing aquatic habitat and restoring habitat that was impacted by fire damage. Thinning and prescribed fire treatments may potentially harm individuals.

Species Determination

Because of these potential impacts, it is our determination that the NFFRP may affect individual northwestern pond turtles (MAI) but is not likely to result in a trend toward federal listing or loss of species viability.

California spotted owl (*Strix occidentalis occidentalis*)

Management Direction and Land Allocations

On February 23, 2023, the U.S. Fish and Wildlife Service (USFWS) proposed listing the Sierra Nevada distinct population segment (DPS) of California spotted owl (CSO) as threatened (88 FR 11600). The CSO is addressed both in the NFFRP BE and separately in a pre-listing Programmatic Biological Assessment and conferencing with the USFWS.

As described in the Wildlife Habitat Treatment Focus Area section of this EA, the 2004 SNFPA ROD provides management direction for CSO habitat on NFS lands by establishing Protected Activity Centers (PACs) and Home Range Core Areas (HRCAs). These established land allocations have desired conditions, management intents, and management objectives that have guided land management over the past 20 years.

CSO suitable habitat was based on the California Wildlife Habitat Relationship vegetation layer and GIS exercises that updated current conditions based on recent wildfires. Those areas of suitable habitat that burned at high intensity were removed from the layer and assumed to no longer be considered suitable. Further refining was completed through analysis of aerial photography to verify presence of suitable habitat. Although research shows

CSO utilize burned areas for foraging, typically these are adjacent to green forest consisting of suitable CSO habitat.

The FS released a Conservation Strategy for the California spotted owl in the Sierra Nevada in 2019 that provides management recommendations based on updated scientific information and management experience. The 2019 California Spotted Owl Strategy defines two additional areas of ecological significance for CSO: territories and home ranges. The Strategy describes territories as areas defended by a resident pair of owls from other owls of the same species. Owl territories on the PNF are 1,000-acre circular areas that include the associated nest stand and PAC. Home ranges include the associated nest stand, PAC, territory, and additional areas to meet owl life-history requirements. Home range sizes are highly variable (1,500 to 5,400 acres) depending on individual owl behavior and environmental conditions. For the North Fork Forest Recovery project, acres that burned at high severity are not considered suitable habitat for California Spotted ; this is consistent with the CSO Conservation Strategy that identified large, high-severity patches are linked to decreases in spotted owl occupancy, colonization, and habitat use (Eyes 2014, Eyes et al. 2017, Roberts et al. 2011, Tempel et al. 2014a) and increases in owl extinction probability (Lee et al. 2013).

This project adopts recommendations from the 2019 California Spotted Owl Strategy through a suite of project-specific plan amendment components developed by the R5 Ecosystem Planning and Ecosystem Management team and released in June 2024.

The project-specific plan amendment (outlined in Appendix B) components differ from the existing Forest Plan direction in the following ways:

- Shifts from using HRCAs to territories;
- Allows more intensive treatment in territories;
- Allows for more reduction of canopy cover in territories;
- Includes a wider range of suitable habitat in the desired condition, and steers activities to produce more heterogenous habitat;
- Allows limited treatments in PACs;
- Allows for lower habitat retention thresholds in wildland urban interface (WUI) Defense Zones, fuelbreaks, and areas identified as being very high risk in fire risk assessments.

The statutes outlined in Appendix B, Table B-1 go into further detail on the list above. With specific definitions for habitat terms such as large trees, large snags, and moderate canopy cover.

The USFWS recently released new management direction regarding limitations on vegetation management and other activities, which was utilized in both the development of treatments

and the effects analysis for the pre-listing Programmatic Biological Assessment with the USFWS. The new USFWS direction requires the analysis of effects on CSO at the territory scale. This section summarizes the effects on CSO at the territory scale, in addition to the PAC and HRCA scales pursuant to existing and emerging direction as described above.

Direct and Indirect Effects

Current management standards and guidelines (USDA 2004, S&Gs 71-81) do not allow mechanical treatment within CSO PACs other than those that occur in WUI Defense Zones. This project includes project-specific Forest Plan amendments to allow mechanical thinning in WUI Threat Zones and non-WUI areas. However, mechanical treatment would be designed to balance near-term habitat quality reduction with long-term resilience of PACs to disturbance and would not reduce habitat quality in the highest quality nesting habitat available within a PAC as outlined in the integrated design feature CSO-10. This design feature directs project actions to retain existing habitat types and habitat function, including a provision to ensure actions do not downgrade or remove existing habitat of any type within the PAC. This is consistent with the guidance from USFWS for consultation analysis and the Conservation Measures in the Programmatic Biological Assessment.

Although mechanical treatment will not occur within the 10-acre nest stands located within PACs, hand thinning could be used in these nest stands where necessary to reduce fuel loads and small tree density. Hand thinning within nest stands would reduce the likelihood of crown fire within the nest stands and protect key habitat structures. Thinning treatments have the potential to result in owl displacement, injury, or mortality. Limiting operating periods (LOPs) will be observed to mitigate direct owl interference. Salvage harvest of standing dead trees would not be permitted in PACs.

Hand and mechanical thinning would also be used within PACs outside of nest stands, leaving large clumps of more than 70% canopy cover and retaining 50% canopy cover averaged across the PAC. Mechanical treatment in PACs is limited based on design features that consider existing habitat conditions and structure (CSO/AGOS-7). Within CWHR classes 4M, 4D, and 5M stands, a minimum of 40% canopy cover would be retained, with treatment focusing on removal of smaller trees to maintain or increase the size class (e.g., thinning smaller trees within a 4D stand may result in the stand moving toward a 5M condition). Within CWHR class 5D stands, 60% canopy cover would be retained. Both hand and mechanical thinning treatments in PACs would provide near-term habitat retention in PACs while reducing the risk of high-severity wildfires. Treatments within CSO territories would retain large trees and snags, facilitate the development of future nest sites, and increase territory heterogeneity and territory resilience to stand-replacing disturbances while maintaining adequate amounts of

mature forest with high canopy cover and structural complexity to provide adequate amounts of high-quality roosting and foraging habitat (see Appendix F: integrated design features CSO/AGOS-8, CSO-9).

While hand thinning in PACs protects important nesting and roosting habitat in the near term, it would not provide mid- to long-term benefits to CSO foraging habitat. The increase in resilience to stand-replacing events resulting from hand thinning treatments would be significantly lower than in mechanically treated stands.

Table 41 summarizes pre- and post-treatment CSO habitat within PACs. While there is no projected net change in total suitable habitat, 701 acres of foraging habitat (CWHR classes 4M and 4D) are expected to improve to nesting/roosting habitat (CWHR classes 5M and 5D). This upward change in size class is expected to follow small tree removal in “thin from below” mechanical thinning treatments that retain 40%-60% canopy cover.

Table 41: Pre- and Post-Treatment CSO Habitat Acres within PACs

Habitat Type (CWHR Class)	Total PAC Pre-Treatment Acres	Total PAC Post-Treatment Acres	Acre Change	Percent Change
Foraging Habitat (4M, 4D)	4,541	3,840	-701	-15%
Nesting/Roosting Habitat (5M, 5D)	5,268	5,968	+701	13%
Total Suitable Habitat (4M, 4D, 5M, 5D)	9,808	9,808	0	0%

In addition to PAC-level conservation measures, this project includes design features to retain at least 40% canopy cover in existing nesting/roosting habitat (5M and 5D stands) within 2,400-acre home ranges areas (CSO-9) and 50% canopy cover within non-WUI Defense Zone HRCAs (CSO-11). Suitable habitat within HRCAs (outside PACs) is expected to decrease by 6 percent (Table 42).

Table 42: Pre- and Post-Treatment CSO Habitat Acres within HRCAs

CWHR Class	Total HRCA Pre-Treatment Acres	Total HRCA Post-Treatment Acres	Acre Change	Percent Change
Foraging Habitat (4M, 4D)	8,229	5,086	-3,143	-38%
Nesting/Roosting Habitat (5M, 5D)	7,663	9,806	+2,144	28%
Total Suitable Habitat (4M, 4D, 5M, 5D)	15,892	14,893	-999	-6%

To mitigate the potential for high severity wildfire in CSO habitat, the Proposed Action would thin in some portions of HRCAs and reduce relative stand density to as low as 25%. However, project-specific Forest Plan amendment STD-TERR-1B limits treatments in territories to not reduce any territory to less than 40% of existing suitable habitat. Outside of WUI Defense Zones and fuel breaks, this restriction increases to 60% of the existing suitable habitat. Where existing suitable habitat falls below these minimums, all suitable habitat must be retained

(e.g., if a territory contains only 32% existing suitable habitat, all foraging and nesting/roosting habitat must be retained).

Potential near-term costs of density- and canopy-reduction treatments may be minimized by maintaining or increasing the highest quality large-tree habitat (Wood et al. 2018) and may be balanced by long-term gains when treatments results in increased persistence/sustainability of habitat elements over time (Jones et al. 2017; Stephens et al. 2014; Tempel et al. 2014, 2015).

Desired conservation outcomes for an occupied territory are to maintain and promote 40 to 60 percent of a territory in mature tree size classes with moderate and high canopy cover to provide a mosaic of nesting, roosting, and foraging conditions (USDA Forest Service 2019). This corresponds to roughly the following CWHR size/density classes, again in descending order of priority: 6, 5D, 5M, 4D, and 4M. Those territories in more mesic conditions and at higher elevations within the watershed should contain relatively more of this habitat than those in drier conditions and at lower elevations (Ibid). Treatments within mesic territories with more favorable growing conditions would retain at least 60% suitable habitat where it exists and would retain all existing habitat if the territory is composed of less than 60% suitable habitat. The remainder of the territory should represent a diversity of many different structures and canopy cover classes that will provide appropriate foraging conditions. When occupied territories do not meet the desired conditions described above, the existing large tree moderate/high canopy cover habitat (for example, CWHR 6, 5D, 5M) is retained wherever it exists throughout the territory.

Overall, only two territories are projected to see a decrease in total suitable habitat of more than 10% (PLU0128 and PLU0170). PLU0128, which intersects a fire management feature near the community of Seneca, is expected to lose 12% of existing suitable habitat. PLU0170 is located in one of the remaining green forest patches within the project area and contains 88% suitable habitat. It is projected to lose 13% of its suitable habitat, leaving it with 75% suitable habitat post-treatment, which is above the current average of 46% existing suitable habitat in territories within the NFFRP. All territories in the project area will meet desired conservation outcomes for occupied territories following treatment, and will benefit from reduced vulnerability to drought, wildfire, and insect and disease outbreaks. Consequently, we anticipate these territories will retain the highest-quality habitat and may promote succession of additional acres into these habitat types. Table 43 summarizes pre- and post-treatment habitat acres within CSO territories.

Table 43: Summary of Pre- and Post-Treatment Habitat Acres in CSO Territories

Habitat Type (CWHR Class)	Total Territory Pre-Treatment Acres	Total Territory Post-Treatment Acres	Acre Change	Percent Change
Foraging Habitat (4M, 4D)	13,440	12,709	-731	-5%
Nesting/Roosting Habitat (5M, 5D)	10,185	10,185	0	0%
Total Suitable Habitat (4M, 4D, 5M, 5D)	23,625	22,894	-731	-3%

Although mechanical thinning treatments within PACs, HRCAs, home ranges, and territories are subject to canopy cover restrictions, treatments within the general forest matrix are based on a target relative stand density index (rSDI) range of 25% to 35%. These rSDI treatments would increase the resiliency of habitat that could support future populations of CSO, as described in the CSO Conservation Strategy (Forest Service, 2019). Table 44 summarizes project-level changes to suitable CSO habitat.

Table 44: Pre- and Post-Treatment CSO Habitat Acres Across the NFFRP

CWHR Class	NFFRP Pre-Treatment Acres	NFFRP Post-Treatment Acres	Acre Change	Percent Change
4M	14,788	10,885	-3,904	-26%
4D	8,956	4,624	-4,332	-48%
Total Foraging Habitat	23,744	15,509	-8,236	-35%
5M	9,951	13,596	+3,645	37%
5D	8,569	7,345	-1,223	-14%
Total Nesting/Roosting Habitat	18,520	20,941	+2,422	13%
Total Suitable Habitat	42,264	36,450	-5,814	-14%

Prescribed fire would be implemented in the project area through underburning and the piling and subsequent burning of existing and activity-generated fuels. Potential direct effects of prescribed fire include disturbance to CSO from smoke, noise, or a combination of these factors. Limited Operating Periods (LOPs) in place around active CSO nests would help mitigate these direct effects. The greatest risk for indirect effects to the CSO from both pile burning and underburning involves the potential for localized high intensity fire, which has the potential to impact CSO habitat as well as habitat for CSO prey. Pile burning and underburning would be conducted in accordance with an approved prescribed fire plan (PMS 484-1), as described in the Interagency Prescribed Fire Planning and Implementation Procedures Guide (PMS 484) and applicable design features under appropriate fuel and weather conditions conducive to primarily low- to moderate-intensity surface fires.

Herbicide treatments for reforestation and invasive plant removal, could impact CSO if prey species have ingested contaminated plant material. However, based on project design features and PNF best management practices, as well as the lack of expected overlap between foraging CSO and proposed reforestation areas, we do not anticipate that this will affect individual CSO. Retention of living trees within burned areas, as well as design features that help to maintain snags availability within areas of high intensity wildfire will mitigate potential impacts to CSO utilizing these burned habitats. Most reforestation efforts will be in large >100 acre blocks of high intensity burned areas, rather than the edges of existing suitable habitat more likely to be used by CSO.

We do not anticipate any effect to CSO from the Proposed Action's hydrological improvements, hazard tree removal, or recreational improvements. All proposed trails will be non-motorized or motorized (open to class 1 e-bikes only). It should be noted that proposed trails will cross PAC habitat in PLU0130. Based on the design features and best management practices both for construction and the possibility of re-routing trails for sensitive species, we do not believe these will significantly impact CSO.

For further details potential impacts to the California Spotted Owl (CSO) are discussed throughout Appendix B and the Biological Evaluation (BE) document. The Proposed Actions discussed take into account features of the CSO habitat as well as how to retain them.

- CWHR class/canopy cover are designated as moderate, moderately high, and high ranging from 40% canopy cover to greater than 60% canopy cover. Project specific plan amendments call for retaining connected areas of moderate (at least 40 percent) and high (at least 60 percent) canopy cover between the known nest site (if nest site is not known, use the most recent known roost site) and areas in the rest of the PAC
- Large and very large trees range in size from 30 inches DBH, or greater, to 36 inches DBH, or greater. Project specific amendments include Retaining clumps of the largest available trees greater than 24 inches DBH and retaining the largest/oldest trees, known nest trees, and other large trees and snags with cavities, deformities, broken tops, or other habitat features of value to old forest species
- Very large snags, snags, high down wood) are designated as 45 inches or larger in diameter. Project specific amendments include retaining large trees and snags with cavities, deformities, broken tops, or other habitat features of value to old forest species.

Species Determination

The Wildlife BE analysis concludes that implementing the Proposed Action may affect individuals and habitat but is not likely to jeopardize the continued existence of the California Spotted Owl. The Sierra Nevada DPS of the CSO is proposed for listing under the ESA as threatened and currently has no proposed critical habitat. While there are concerns about the short-term effects of losing high-quality habitat, the treatment of overstocked, dense (CWHR cover class 'D') stands will not only increase fire resiliency and bring those stands back into the natural range of variation, but the proposed treatments will also increase forest heterogeneity. More recent analyses indicate that CSO population declines are likely not the result of current forest management strategies but are instead a lag effect from historic large tree removal and a century of fire suppression. Continued fire suppression and other activities that maintain or increase forest homogeneity may also be contributing to these declines, due to effects on CSO prey species (NFF Recovery, pg. 27). As noted above, PAC treatments will focus on the removal of surface and ladder fuels and maintain or improve existing suitable habitat. In addition, the project's design features, both related to treatments within PACs and HRCAs as well as LOPs, will reduce potential impacts. Proposed reforestation activities will help restore habitat in high-severity burned areas toward desired conditions much more quickly than the No Action Alternative.

Willow flycatcher (*Epidonax trailii brewsteri*)

Direct and Indirect Effects

In the long term, the proposed meadow and hydrologic improvements would restore meadows impacted by the Dixie Fire and improve growing conditions for riparian hardwoods, providing bank stability, shade to streams, and improved habitat for willow flycatcher. In some cases, stream channels will be re-contoured to reestablish hydrological functions. Although efforts will be made to avoid willows and other riparian vegetation, there is the possibility that habitat could be impacted in the short-term. However, willows would recover relatively quickly, especially as conditions improve following hydrological improvement efforts. In summary, project wildlife biologists anticipate potential temporary impacts to the willow flycatcher from proposed treatments, resulting in significant benefits over the mid- to long-term.

Species Determination

The analysis presented in NFFRP Biological Evaluation concludes that the Proposed Action may affect individual willow flycatcher (MAI) but is not likely to result in a trend towards federal listing or loss of species viability. This determination is based on population and habitat assessments of the region (Green et al. 2003, Loffland et al. 2014), local knowledge of the willow flycatcher, and professional judgement.

American goshawk (*Accipiter atricapillus*)

The following CWHR types within the project area provide suitable nesting habitat for American goshawk (AGOS): 4D, 4M, 5D, and 5M. The following CWHR types provide suitable foraging habitat: 5P, 4P, 3D, and 3M (SNFPA FEIS Vol 3, Chap.3, part 4.4 pg. 116; USDA 2001). Based on the vegetation layer and the CWHR model, roughly 42,266 acres or approximately 25% of the project area is composed of suitable nesting habitat (4M, 4D, 5M, 5D) while 23,425 acres or roughly 14% of the project area is composed of suitable goshawk foraging habitat (3M, 3D, 4P, 5P).

The analysis of the American goshawks in the NFFRP BE evaluates the project's potential effects to goshawks and goshawk habitat on two spatial scales: 1) the 200-acre PAC, which incorporates established and suspected nest stands along with the surrounding highest quality habitat for each of the 27 known territories within or immediately adjacent to the project area; and 2) suitable habitat in the project area. The analysis considers the entire treatment area because goshawks can range well over a mile from their nest or roost when foraging. Table 45 summarizes the impact of treatments to goshawk habitat from the Proposed Action.

Table 45: Treatment Summary of American goshawk habitat in the NFFRP Area.

Goshawk Habitat Type	NFFRP Pre-Treatment Acres	NFFRP Post-Treatment Acres	Acre Change	Percent Change
4D	8,956	4,624	-4,332	-48%
4M	14,788	10,885	-3,904	-26%
5D	8,569	7,345	-1,223	-14%
5M	9,951	13,596	3,645	37%
Nesting subtotal	42,264	36,450	-5,814	-14%
3D	809	453	-355	-44%
3M	1,079	360	-719	-67%
4P	15,210	14,947	-263	-2%
5P	6,327	9,106	2,779	44%
Foraging subtotal	23,425	24,866	1,441	6%
Total suitable habitat	65,689	61,316	-4,373	-7%

Direct and Indirect Effects

Direct impacts to goshawks from project activities are expected to be limited, because pre-implementation surveys will occur prior to any ground-disturbing treatment and nesting/roosting habitat within PACs will not be reduced during treatments. Treatments in the Proposed Action would maintain and promote the highest quality nesting and roosting habitat while working to increase resilience of the PACs to severe disturbances. Treatments would reduce tree density of smaller trees that are prohibiting growth of larger trees, increase the chances the goshawk PACs would survive wildfire, and minimize the loss of and recruit new, larger trees and snags.

Changes in foraging and nesting habitat within goshawk PACs due to treatments are summarized below in Table 46. There is very little change in total foraging habitat and no change in nesting/roosting habitat across the project's goshawk PACs.

Table 46: Pre- and Post-Treatment Acres of Suitable Habitat within American Goshawk PACs

Habitat Type (CWHR Class)	Total AGOS PAC Pre-Treatment Acres	Total AGOS PAC Post-Treatment Acres	Acre Change	Percent Change
Foraging Habitat (3M, 3D, 4P, 5P)	821	813	-8	-1%
Nesting/Roosting Habitat (4M, 4D, 5M, 5D)	3,358	3,361	4	0%
Total Suitable Habitat (3M, 3D, 4P, 5P, 4M, 4D, 5M, 5D)	4,179	4,175	-4	0%

Prescribed fire activities (underburning and pile burning) in late fall to spring has the potential for direct effects to American goshawks, including the disturbance of individuals from smoke, noise, or some combination of these factors. As noted in the design features, limited

operating periods (LOPs) will be in place around active nests which should reduce any additional direct effects; however, if deemed necessary, prescribed fire can be used within active goshawk PACs. The greatest risk for indirect effects from the use of prescribed fire to goshawks and their prey species involves the potential for localized high-intensity fire; however, an approved prescribed fire plan (PMS 484-1) and applicable design features under appropriate fuel and weather conditions conducive to primarily low- to moderate-intensity surface fires should minimize this risk.

As with the CSO PAC PLU0130, a proposed non-motorized trail is routed through a goshawk PAC (R05F11AD02T31) for roughly 700 meters. This goshawk PAC overlaps CSO PAC PLU0130. Project design features (such as re-routing a trail in an occupied area) and BMPs will mitigate any potential impacts during construction of this trail.

The greatest potential negative effect of reforestation efforts on AGOS is through the herbicide treatments. As with the CSO, raptors like the goshawk could prey on animals that have consumed contaminated plant material. Application rates limited to those analyzed in the Human Health and Ecological Risk Assessment in the project record are expected to limit these impacts. Hazard tree removal and hydrological improvements may cause limited disturbance to AGOS individuals during implementation but would not adversely impact habitat. Hydrological improvements may benefit AGOS during foraging when those areas are near or adjacent to occupied habitat.

Species Determination

The NFFRP BE assessment concluded that the Proposed Action may affect individuals and habitat but is not likely to result in a trend toward Federal listing for the American goshawk. Standards and guidelines for the management of goshawk habitat are prescribed by the PNF LRMP, as amended by the 2004 SNFPA ROD. These standards and guidelines, as well as project design features, will reduce impacts to AGOS individuals and habitat. Although a substantial amount of suitable but unoccupied nesting habitat is planned for treatment and may be converted to foraging or non-suitable habitat, the wildlife analysis in the NFFRP BE concludes that the benefits of the reduced risk of stand-replacing fire, the increase in heterogeneity across the landscape, and the consequent increase in habitat for a diverse prey base, significantly outweigh those potential impacts. Surveys will occur prior to treatments, and survey results will be incorporated into existing conditions which will inform management actions.

Pacific fisher (*Pekania pennanti*)

Direct and Indirect Effects

Direct injury or mortality to individual fisher during implementation of the Proposed Action is unlikely due to species mobility and design features that specify LOPs around denning sites. However, indirect effects from habitat modifying mechanical treatments will result in a significant reduction in high quality denning habitat. A 32% reduction in high quality denning habitat, a 7% reduction in denning habitat, and a 14% overall reduction in total suitable habitat are anticipated across the project area. Fisher are uncommon, but present within the project area. Additionally, implementation of design features regarding denning sites would require coordination with state and/or federal wildlife agencies in order to electronically track individuals to determine den locations.

While mechanical treatments will result in some denning habitat being moved out of suitability, they will also reduce ladder fuels and stand density, which will result in greater fire-resiliency across the landscape and a lower susceptibility to stand-replacing disturbances. Mechanical thinning treatments will also result in an increase in the health and growth capability of the remaining trees which, consequently, will allow a more rapid development of fisher denning habitat. There is potential that proposed treatments could destroy unknown den sites and reduce denning opportunities. This could result in mortality or predation during relocation. Project design features, including the buffering of active den sites, will help mitigate these potential impacts but they cannot eliminate the possibility of them occurring.

Although there is some risk that an individual fisher could be harmed by fire treatments, the more likely potential direct effect is that fishers are forced to shift or relocate their home ranges during and immediately after a prescribed fire. This could lead to an increased chance of predation and decreased predation efficiency for individual fishers. The project's design features should minimize the potential direct effects from prescribed fire. Regardless of whether fisher are within or adjacent to treatment areas, the potential direct effects of fire would be reduced if treatments are conducted after mid-May when breeding fishers have finished denning (Truex & Zielinski, 2013). If active den sites are located, the application of an LOP prohibiting project-related activities from March 1 to June 30 in den buffers would prevent disturbance from prescribed fire while fisher kits are being born and reared.

Reforestation efforts will provide a long-term benefit to fisher and will help reestablish mature forest and connectivity lost during the Dixie Fire. There is the potential that herbicide treatments used to release trees or to remove non-natives as part of the reforestation effort could impact the species. Fisher prey that had been exposed to herbicide could affect fisher;

however, based on the project design features and BMPs, especially related to the type and concentration of herbicides, a significant effect is not anticipated. Hydrological improvements are expected to have wholly beneficial impacts to fisher habitat, apart from potential for temporary disturbance and avoidance behavior.

Recreational improvements and especially trail construction have the potential to impact this species. It is unlikely that fisher will be directly affected by the treatment but if fisher abandon their dens during construction, they may increase the risk of predation. Although as part of the design features, buffers will be placed around known dens, this design feature will not mitigate potential effects if a given den is not identified.

Species Determination

The analysis presented in the NFFRP BE concludes that implementation of the Proposed Action may affect individuals and habitat but is not likely to result in a trend toward Federal listing for Northern California and Southern Oregon (NCSO) distinct population segment (DPS) of the Pacific fisher. There is currently one known occupied fisher territory within the project area, though at this point it is unclear if it is going to remain a resident or continue dispersing. Implementation of primary design feature for fishers would require coordination with state and/or federal wildlife agencies to determine den sites. With much of the forest carnivore habitat within the NFFRP destroyed by the Dixie Fire, reforestation efforts will more rapidly restore habitat for the fisher. In unburned areas, the thinning of overstocked stands may result in the loss of denning and total suitable habitat; however, the mid- to long-term benefits of treating overstocked forests to reduce the risk of stand-replacing fire are significant and beneficial to this species.

Sierra marten (*Martes caurina sierra*)

Direct and Indirect Effects

Like the Pacific fisher, the Sierra marten is strongly tied to mature forests with high structural complexity. CWHR habitat classes 6, 5D, 5M, 4D, and 4M comprise suitable habitat for marten. Although there are no class 6 stands, there are a total of 42,264 acres of suitable habitat in class 4D, 4M, 5D, and 5M stands in the project area.

Potential direct effects to individual marten are limited from the Proposed Action treatments; however, it is likely that some treatments may cause changes in behavior or home ranges which could expose marten to predation. Mechanical VDT treatments in occupied stands are the most likely to cause displacement of martens because of the high level of disturbance. Removal of hazard trees may remove potential den sites and possibly reduce suitability of an area. If marten dens are identified, they will be protected design feature WLDF-4, which specifies an LOP during the maternity season within a 100-acre buffer of the den site.

Overall suitable marten habitat (4D, 4M, 5D, and 5M) will be reduced by 14% across the project area. The BE analysis concluded that the long-term benefits of the reduced risk of more high-severity fire in the remaining mature stands likely outweigh this loss of suitable habitat.

Under the Proposed Action, prescribed fire may be used across the entire project area. As with thinning treatments, fire could cause marten to shift or relocate their home ranges during and immediately after a prescribed fire. This could lead to an increased chance of predation. Prescribed fire may cause marten injury or mortality, though this is less likely. Prescribed fire will also affect foraging and denning habitat, but these changes will be limited to the understory where smaller overstocked trees and surface and ladder fuels will be removed.

Like the fisher, the NFFRP BE concluded that reforestation activities will benefit marten by accelerating the development of suitable habitat and the re-establishment of connectivity across areas burned by the Dixie Fire. The primary risk associated with herbicide use is the potential for marten to eat prey that had been exposed to the herbicide. However, the BE concluded that this impact is unlikely to be significant due to the low likelihood that marten occupy the project area, and the spatial separation between reforestation areas and suitable marten habitat.

Trail construction could also impact the marten when trails are routed through mature forest. Although direct harm to a marten is highly unlikely, if individuals are forced to relocate during construction, they will risk predation. Additionally, increased recreational use on trails may reduce quality of habitat through disturbance.

The proposed thinning treatments, fuels reduction, and prescribed fire will reduce habitat suitability, but is not expected to substantially reduce habitat connectivity. The Proposed Action does not include actions that create large gaps or large clearings that would reduce marten movement or dispersal across the landscape. During the project implementation period habitat suitability would be reduced, but ultimately, habitat would recover more rapidly under the Proposed Action than the no action alternative, and over time there would be a net increase in suitable late-seral habitat.

As with all species that are associated with mature forests, moderate and high-severity wildfires can devastate marten denning and foraging habitat. The NFFRP BE concluded that the impacts of prescribed fire, which causes low-severity damage to the understory and stand structural complexity will be mitigated by the accelerated regeneration and increased fire resilience of these stands. It is also worth noting that potential impacts of fire (and thinning) treatments to marten will be dispersed geographically and temporally. A significant impact to marten habitat suitability or connectivity is not anticipated at any single point in time.

Species Determination

The NFFRP BE concludes that the project's proposed action may affect individuals and habitat, but is not likely to result in a trend toward Federal listing for the Sierra marten. Planned treatments in the majority of mature forests stands will be limited in their impact due to the habitat retention guidelines required for CSO; however, both thinning and prescribed fire treatments have the potential to displace individual martens which could increase the predation risk.

Pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), and Fringed myotis (*Myotis thysanodes*)

Direct and Indirect Effects

This section summarizes potential direct and indirect effects of the Proposed Action to the three bat species that may be found in the project area. The treatment of dense forest stands in the project area will utilize the VDT prescription that effectively increases stand heterogeneity by creating dense clumps of trees and open areas. These will be distributed throughout a forest matrix characterized by large, shade intolerant conifers and low surface and ladder fuel loads. Although roosting bats might be disturbed during limbing and stand thinning, they should be able to safely relocate to another roost. Hazard tree removal, as well as live tree and vegetation removal as part of trail construction could also force bats to relocate during implementation.

Implementation of mechanical thinning in the project area will occur over the course of several years and the short-term effects will therefore be limited and localized to specific areas in any given year. Longer term indirect effects of mechanical thinning on these bat species include changes in forest structure from VDT. These changes can result in the increased distribution of floral resources for insects in openings within forested stands and the prevalence of high-contrast forested edges. These will likely benefit all three of these bat species. In addition, thinning activities that reduce the risk of high-severity wildfire and insect and disease outbreaks will decrease the likelihood of immediate and landscape level habitat changes that may threaten the viability of the pallid bats, Townsend's big-eared bats, and the fringed myotis on the PNF.

Large snags and large live hardwoods with cavities or potential roosts, as well as potential day and maternity roosts in caves, mines, buildings, and rock outcroppings, are not expected to be impacted by low-intensity underburning treatments. There is the potential that bats roosting closer to the ground, under the bark, or in cavities in younger, smaller trees could be directly harmed by fire. The low severity and slow movement rate of prescribed fire would allow roosting bats to relocate; however, females caring for young may abandon roost sites

due to smoke, heat, or noise disturbance, which could result in reduced productivity. Regardless, these effects would be highly localized and would not impact the population-level reproductive rates of these species. Project design features including limited operating period buffers around known roosts would help mitigate these potential impacts. Additionally, the vast majority of vegetation management activities target conifer removal and would retain hardwoods used by bat species.

Hydrological improvements would have wholly beneficial indirect effects to bat species, through increased prey availability and increase in foraging habitat. Direct effects would not occur as the nocturnal nature of bats would limit the temporal overlap between bat foraging and project activities.

Herbicide use both for reforestation and invasive species management may impact bats through the potential for contaminated insect prey. These effects would be relatively short lived but may cause injury or mortality to individual bats, though this is unlikely due to the low application rates.

Species Determination

Implementation of the proposed project may affect individuals and habitat but is not likely to result in a trend toward Federal listing for the pallid bat, Townsend's big-eared bat, or the fringed myotis. The project is not expected to interfere with maintaining viable well-distributed populations of these three species.

Hardhead (*Mylopharodon conocephalus*)

Direct and Indirect Effects

Although hydrologic restoration treatments under the Proposed Action may occur within stream channels, the riparian design features, including the National Marine Fisheries Services (NMFS) Water Drafting Guidelines, and hydrologic-related BMPs will protect hardhead stream habitat. Water drafting is not likely to significantly disturb this species because most drafting is likely to take place in small pools adjacent to roads that make up a very small percentage of the suitable habitat available. Water drafting, which will follow the project's design features, would cause only a temporary disturbance and would not harm individual hardheads and would not affect spawning sites.

The biggest threat to hardhead minnow from the Proposed Action is increased sediment flow into their spawning habitat. Proposed mechanical treatments will follow project design features and BMPs, reducing the potential for sediment flow into stream channels. Road repair, culvert replacement, and hydrological improvements may result in a minor short-term increase in sediment; however, following implementation of the Proposed Action, a marked

reduction in baseline sediment flow is anticipated. In addition, the hydrology and wildlife design features will mitigate or prevent any significant sediment flow into stream channels during, or as a result of, project treatments.

Prescribed fire treatments will also increase the risk of sediment flow into stream channels that represent occupied or suitable hardhead habitat. With less vegetation, soil will have a greater chance of erosion during rain events; however, fire treatments will reduce the likelihood of future high-severity fires which cause significant sediment flow as well as an increased chance of scouring.

Species Determination

Implementation of the proposed project may affect individuals and habitat but is not likely to result in a trend toward Federal listing for the hardhead. The project is not expected to interfere with maintaining viable well-distributed populations of the species.

Cumulative Effects to Forest Service Sensitive Species & ESA Proposed and Candidate Species

A cumulative effect can result from the incremental impact of an action when added to the effects of past, present, and reasonably foreseeable future actions (PORFFA) affecting areas in and around the NFFRP area. A quarter-mile buffer around the project area plus all CSO and AGOS PACs that intersect the project area was considered as the cumulative effects analysis area (CEA) for wildlife species to encompass areas impacted by noise, smoke, or other disturbances associated with treatments, as well as reasonably foreseeable future actions within or adjacent to the project. The cumulative effects of past actions over the last 30 years, from 1993 to 2023, are based on an assessment of current baseline environmental conditions. The following is a summary of anticipated cumulative effects on Forest Service Sensitive species addressed in the NFFRP Wildlife BE. Projects or actions that did or could potentially impact the CEA are identified in the project's PORFFA which is included in the project record.

With respect to past actions as they are reflected in the current condition of the CEA, it's important to acknowledge the history of fire suppression and the subsequent impact of wildfire on forest habitat across the landscape. Ninety-four percent of the project area falls within the footprint of the 2021 Dixie Fire, and 42% of the project area burned at high severity. For species like the American goshawk and Pacific fisher, such a widespread high-severity fire can be equated to habitat loss and has the potential to compromise habitat connectivity for these species. Western bumblebees also require forest habitats for overwintering, which are now scarce in the high severity burned portions of the project area. Insect species associated with flowering plants such as western bumblebees and monarch butterflies experience a short-term increase in foraging resources post-fire, but the post-fire reduction in forest heterogeneity will indirectly affect these species as forest edges are some of the most utilized

foraging habitats. Degraded conditions in meadows, streams, and riparian areas are common throughout the fire damaged portions of the project area and surrounding areas. The Dixie Fire exacerbated these issues with the decrease in vegetative cover and increase in sedimentation post-fire.

Although active forest management has been routine across the CEA over the past 30 years, the majority of the stands across the area remain overstocked and homogenous and, consequently, prone to high-severity, stand-replacing fire. Like the NFFRP's Proposed Action, other Forest Service projects in or adjacent to the CEA aim to reverse long-term vegetative trends that have resulted from a long history of fire suppression. These include the Community Protection Central and West Slope Project, the Tributaries Forest Recovery Project, and the Dixie Postfire Restoration and Recovery Project which will be implementing landscape-level treatments to increase forest health and resilience. These projects also seek to restore watershed health using similar techniques to those being utilized in the NFFRP project. In addition, timber harvest and reforestation activities on private land within and adjacent to the NFFRP CEA is expected to continue.

Implementation of this proposed Project, in combination with past, present, and foreseeable future actions, is not expected to result in adverse effects or in a trend toward federal listing for these FS Sensitive species. Planned treatments will likely occur within or immediately adjacent to suitable habitat for these species and some of that habitat will not be considered suitable post-treatment. Project activities are designed to restore habitat suitability within the Dixie Fire footprint. The effects of smoke or noise disturbance will be reduced or eliminated through the project design features, BMPs, and the use of LOPs and the project's impacts would be spread out over the entire area for the duration of the project.

Cumulative impacts from road ingress-egress work as well as other maintenance work in the CEA would be reduced or eliminated using design features with LOPs. Use of the LOPs would also mitigate noise disturbance and the design features would prevent excess fine sediment flow into streams.

In summary, a long-term benefit to these species is anticipated, due to the cumulative impacts of the NFFRP, in combination with foreseeable projects in the CEA. Following design features and using LOPs, individual animals are unlikely to be significantly impacted and ultimately, the lands will see a reduction of hazardous fuels, a reduced risk of disease and insect mortality of trees, and an increase in forest heterogeneity. The cumulative reduction of hazardous fuels will also benefit watersheds and aquatic habitat by reducing sediment flows resulting from moderate and high-intensity wildfires.

Effects on Federally Listed Species

Foothill Yellow-legged Frog (*Rana boylei*) and Sierra Nevada Yellow-legged Frog (*Rana sierrae*)

Prior to implementation, protocol-based amphibian surveys will occur on all suitable habitat throughout the project area. This will help guide buffers used, provide baseline occupancy data, and prevent impacts to individuals and occupied habitat. Currently, approximately 305 of the 893 miles of intermittent and perennial stream habitat have been surveyed within the analysis area. No listed amphibians have been found to occupy the project area, however, minor overlap of the analysis area with a population in a different watershed does exist.

Direct, Indirect, and Cumulative Effects

Direct impacts on Foothill Yellow-legged Frog (FYLF) and Sierra Nevada Yellow-legged Frog (SNYLF) from the proposed action could occur if treatment activities are implemented within or adjacent to occupied habitat, especially upland habitat. This includes direct injury from humans or mechanical equipment, impacts from noise which could result in the disruption of breeding or foraging activities, or temporary displacement of frogs which could increase the risk of predation. Water drafting has the potential for direct impacts to individual frogs, young, and eggs within stream channels. Proposed hydrological treatments and road work could also result in the injury or mortality of individual frogs during the installation of hydrological features and culverts, as these actions necessitate instream work including potentially utilizing heavy equipment. The BA concludes that the potential short-term direct effects of hydrological improvements are outweighed by the benefits of restoring hydrological function, which ultimately would enhance and increase suitable habitat.

The project's design features and conservation measures along with Best Management Practices (BMPs) would reduce or eliminate potential direct impacts to these two frog species by limiting the types and intensity of treatment and water drafting within suitable and occupied habitat. Equipment exclusion zones (EEZs) established adjacent to perennial, intermittent, and ephemeral streams as well as other special aquatic features (e.g., lakes, meadows, bogs, fens, wetlands, vernal pools, springs) will limit treatment activities to hand treatments and prescribed fire backing.

During the majority of project activities, suitable habitat for both the FYLF and SNYLF will not be altered or removed; however, it is possible that prescribed fire could burn into and impact streamside vegetation or cause increased sediment flow. With the implementation of project design features and BMPs, the effects of prescribed burning would be negligible.

Hydrological improvements activities would have indirect effects to suitable FYLF and SNYLF habitat, though these would likely be beneficial. Improvements should decrease water

temperature, provide an increase in riparian vegetation, and provide a longer hydro period in intermittent and low flow streams.

Temporary road and trail construction would increase the potential for soil movement and increase potential sedimentation into streams and aquatic habitats. Project BMPs and forest practices should mitigate the potential for increased sediment flow. Due to project design features which include routing trails to avoid impacts to listed species, construction of new trails would not result in negative effects to listed amphibians or reduce the suitability of habitat. Surveys will occur prior to implementation and any occupied habitat will be avoided by re-routing trail to unoccupied habitat, or proposing new actions outside this project, which may require re-initiating consultation with USFWS. Currently known occupied habitat is approximately 7 miles from the proposed trail construction area.

Herbicide use adjacent to occupied habitat has the potential to impact prey species directly or indirectly by reducing vegetation and floral resources that prey may depend on. With the implementation of design features that prevent herbicide treatment within 107 feet of suitable habitat and require a biological monitor when within 500 feet of occupied sites to ensure no effect to listed species, these effects are expected to be negligible.

Overall environmental effects of NFFRP vegetation treatments will be reduced disease, improved stand composition, and reduced fuels. These will all help mitigate the anticipated effect of climate change. Due to the project's design features, the thinning activities should pose a minimal risk to these species, and increased sunlight and groundwater may provide long-term benefits. Because of their highly aquatic nature, the burning should be a low-risk threat, and low intensity fuels reduction will reduce the risk of catastrophic wildfire, which would pose a greater risk to SNYLF and FYLF.

Aquatic habitat would not be targeted for vegetation treatments; however, hydrological improvement and post-fire revegetation treatments could include conifer removal and some habitat modification in riparian and meadow habitats. However, surveys will determine occupancy status, and should listed amphibians occur within areas proposed for project activities, actions within occupied habitat will stop, actions and/or locations will be re-evaluated, and consultation with USFWS could occur if altering proposed action may result in effects to individuals or occupied habitat.

The NFFRP BA found that cumulative effects to FYLF and SNYLF are unlikely, due to the lack of known, occupied habitat in the project area.

Species Determination

The NFFRP may affect but is not likely to adversely affect either the foothill yellow-legged frog or the Sierra Nevada yellow-legged frog. Surveys will be conducted in advance of any treatments and design features will be implemented in areas of both suitable and occupied habitat. Based on project design features and a lack of known occupancy, we anticipate a very minimal chance of direct effects to these frog species, and indirect impacts to prey and habitat will be insignificant. If either species is found to occur within the project area, coordination with the USFWS would occur and consultation would be reinitiated.

Gray Wolf (*Canis lupus*)

All habitat within the NFFRP action area is considered suitable for the gray wolf. No critical habitat for the gray wolf occurs in the action area.

Direct, Indirect, and Cumulative Effects

Wolves defend large home ranges and move considerable distances during a given day (Kovacs et al. 2016). Consequently, it is difficult to determine if a gray wolf might occur in or near the project area when the proposed action is implemented. Gray wolf space use is dynamic, depending on motivation (e.g., feeding versus denning) and wolf pack boundaries as well as den site locations frequently shift (Kovacs et al. 2016). Because the home ranges of two different wolf packs may overlap the project area (Lassen and Beyem Seyo Packs), there is the potential for future denning or rendezvous sites to become established in the project area prior to or during implementation. Regardless of the whereabouts of these packs, it is not expected that the wolves would be directly impacted by the proposed actions. Wolves' typical reaction to human disturbance is avoidance (Kovacs et al. 2016), and wolves have been documented to relocate pups out of areas with heavy equipment disturbance. While reproductive success may not be influenced by the amount or types of human activities, wolf pups may be vulnerable to disturbance when younger (Frame et al. 2007).

While direct effects to the gray wolf are unlikely, the proposed action could potentially affect prey resources and could alter the wolves' behavior. Therefore, to prevent indirect effects from occurring, design features or conservation measures specific to the gray wolf will be implemented (see the NFFRP BA). The project overall would not make any habitat unsuitable to wolves, other than disturbance-caused short-term avoidance of otherwise suitable habitat. Because disturbance-caused effects at least near known den sites would be mitigated, project effects are not expected to be significant. Additionally, the risk of short-term avoidance behaviors from the project is expected to be low because active treatment units will be dispersed temporarily and spatially.

Implementation of vegetation treatments will not result in the conversion of any gray wolf habitat from suitable to unsuitable and the only anticipated impacts stem from avoidance due to disturbance. These potential impacts will largely be mitigated by the design features that require buffering around known den and rendezvous sites.

The most likely indirect effect of the Proposed Action is the potential impact to prey and specifically the mule deer (*Odocoileus hemionus*) habitat. As noted in the BE, project wildlife biologists anticipate that the Proposed Action, especially thinning treatments and meadow improvements, will enhance mule deer habitat while also increasing the forest's resilience to high-severity fire and other disturbances. These treatments will in turn help mitigate the effects of climate change. Without the proposed treatments the forested habitat will become increasingly susceptible to high-severity fire as well as disease and insect infestation. Consequently, any indirect impact to the gray wolf from the proposed action are expected to be neutral or positive.

Construction of new trails would route trails to avoid negative impacts to listed species; however, the increased use of these trails by non-motorized and e-bike recreational users will increase human presence in the trail corridor as well as noise and given the large areas used by wolves, construction of new trails could lead to changes in activity or use patterns. These impacts are expected to be negligible due to the fact that the proposed trails are non-motorized or motorized (open to Class 1 e-bikes only), and through coordination with CDFW and the Service to avoid the most sensitive areas.

Species Determination

The NFFRP may affect but is not likely to adversely affect the gray wolf. Although it is unknown if wolves are currently denning or will den within the project area, it is anticipated that they will avoid treatment areas during implementation. In addition, the Forest Service will be able to mitigate any negative direct or indirect effects to known wolves that may develop during implementation through project design features and coordination with CDFW and the USFWS. If future gray wolf activity patterns indicate the project's potential impacts are no longer discountable, consultation with USFWS will be reinitiated.

Management Indicator Species

Management Indicator Species (MIS) for the PNF are identified in the 2007 Sierra Nevada Forests Management Indicator Species Amendment (USDA Forest Service 2007). The habitats and ecosystem components and associated MIS analyzed for the project were selected from this list of MIS (Table 47). In addition to identifying the habitat or ecosystem components, the CWHR type(s) defining each habitat/ecosystem component, and the associated MIS, the table discloses whether the MIS habitat is potentially affected by the NFFRP.

Table 47: Selection of MIS for Project-Level Habitat Analysis for the NFFRP.

Habitat or Ecosystem Component	CWHR Type(s) Defining the Habitat or Ecosystem Component ¹	Sierra Nevada Forests Management Indicator Species	Analysis Category ²
Riverine & Lacustrine	Lacustrine (LAC) and Riverine (RIV)	Aquatic Macroinvertebrates	3
Shrubland (west-slope chaparral types)	Montane chaparral (MCP), mixed chaparral (MCH), chamise-redshank chaparral (CRC)	Fox Sparrow - <i>Passerella iliaca</i>	3
Sagebrush	Sagebrush (SGB)	Greater Sage-Grouse - <i>Centrocercus urophasianus</i>	1
Oak-associated Hardwood & Hardwood/Conifer	Montane hardwood (MHW), montane hardwood-conifer (MHC)	Mule Deer - <i>Odocoileus hemionus</i>	3
Riparian	Montane riparian (MRI), valley foothill riparian (VRI)	Yellow Warbler - <i>Dendroica petechia</i>	3
Wet Meadow	Wet meadow (WTM), freshwater emergent wetland (FEW)	Pacific Tree (Chorus) Frog - <i>Pseudacris regilla</i>	3
Early Seral Coniferous Forest	Ponderosa Pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), Jeffrey pine (JPN), tree sizes 1, 2, and 3, all canopy closures	Mountain Quail - <i>Oreortyx pictus</i>	3
Mid Seral Coniferous Forest	Ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), Jeffrey pine (JPN), tree size 4, all canopy closures	Mountain Quail - <i>Oreortyx pictus</i>	3
Late Seral Open Canopy Coniferous Forest	Ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), tree size 5, canopy closures S and P	Sooty (Blue) Grouse - <i>Dendragapus obscurus</i>	3
Late Seral Closed Canopy Coniferous Forest	Ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), tree size 5 (canopy closures M and D), and tree size 6.	California Spotted Owl - <i>Strix occidentalis occidentalis</i> Pacific Marten - <i>Martes caurina</i> ³ Northern Flying Squirrel - <i>Glaucomys sabrinus</i>	3
Snags in Green Forest	Medium and large snags in green forest	Hairy Woodpecker - <i>Picoides villosus</i>	3
Snags in Burned Forest	Medium and large snags in burned forest (stand-replacing fire)	Black-Backed Woodpecker - <i>Picoides arcticus</i>	3

¹ All CWHR size classes and canopy closures are included unless otherwise specified (Mayer and Laudenslayer 1988)

² **Category 1:** MIS whose habitat is not in or adjacent to the project area and would not be affected by the project.

Category 2: MIS whose habitat is in or adjacent to project area but would not be either directly or indirectly affected by the project.

Category 3: MIS whose habitat would be either directly or indirectly affected by the project.

³ Identified as American Marten (*Martes americana*) in original MIS designation. Later classified as a separate species by Dawson and Cook (2012).

The MIS whose habitat would be either directly or indirectly affected by the NFFRP, identified as Category 3 in Table 47, are presented in the Wildlife Report, which evaluates the direct, indirect, and cumulative effects of the Proposed Action and No Action alternatives on MIS habitat. The MIS selected for project-level MIS analysis for the NFFRP are: aquatic macroinvertebrates, fox sparrow, mule deer, yellow warbler, Pacific tree (chorus) frog, mountain quail, sooty grouse, California spotted owl, Pacific marten, northern flying squirrel,

hairy woodpecker, and black-backed woodpecker. **Table 48** summarizes the pre and post treatment acres of coniferous forest MIS species habitat.

Table 48: Change in acres of coniferous forest MIS Habitat following the Proposed Action treatments

Seral stage	CWHR Classification	Acres of Existing Condition in NFFRP	Acres of Post-Treatment Habitat in NFFRP
Coniferous Forest - Early Seral	Size Class 1-3 (all canopy closures)	64,385	68,560
Coniferous Forest - Mid Seral	Size Class 4 (all canopy closures)	46,899	38,547
Coniferous Forest - Late Seral, Open Canopy	5S, 5P	9,407	16,569
Coniferous Forest - Late Seral, Closed Canopy	5M, 5D	18,520	20,941

The black-backed woodpecker was selected as the MIS for the snags in burned forest ecosystem component given the extent of burned forest in the project area. Approximately 70,368 acres of the project area burned at high severity (>75 percent basal area loss). This MIS habitat type is assumed to exist across those acres, except where emergency hazard tree removal may have occurred separate from this project. Snag retention areas (10,330 acres) are an identified treatment focus area for wildlife benefit. Snag retention strategies will vary based on species, with high density snag pockets adjacent to green forest ideal for black-backed woodpecker. Potential high-density snag retention areas were identified using GIS to compare black-backed woodpecker habitat suitability with wildland urban interface defense zones and potential reforestation areas. Generally, these areas are moderate to high severity burned areas greater than 1 mile from major roads, homes, powerlines, and other infrastructure, as well as on steep slopes that limit accessibility and public use. Additionally, BBWO are more likely found to utilized areas of high intensity wildfire in close proximity to green forest. Therefore, the PA of reforestation treatments on large >100 acre blocks should have little impact on BBWO use of the project area.

While the proposed action may affect MIS habitat, the relationship of project-level habitat impacts to the habitat trends at the bioregional-scale is expected to be negligible for each of the category 3 MIS species habitat.

As a result of the PA, the pre-project total of 70,368 acres of severely burned habitat by the Dixie Fire could be reduced to roughly 10,330 acres. Similar treatments could also occur in the CEA outside of the project area. Because of the quantity of burned forest across the Sierra Nevada mountains, the PA will not result in adverse cumulative effects. Project-level effects on MIS habitat are analyzed and discussed more fully in the Wildlife Specialist in the project

record. This includes examining the impacts of the proposed project alternatives on MIS habitat by discussing how direct, indirect, and cumulative effects will change the habitat in the analysis area. Additional detail is also provided in Appendix D – Treatment Focus Areas and the Past, Ongoing, and Reasonably Foreseeable Future Actions (PORFFA) Report for the project.

Appendix D and the project PORFFA outline treatment focus areas and how they might effect MIS species in more detail. Wildlife species in the analysis include, but are not limited, to the CSO, American Goshawk, and the Black-Backed Woodpecker.

No Action

Under the No Action Alternative the conditions in the NFFRP area would continue in the same state and would develop along the same trajectory. This assessment of effects on wildlife species and their habitats considers current and anticipated future conditions within the NFFRP and Wildlife Analysis Area landscape without management intervention, including the potential for stand-replacing disturbance from wildfire, insect, or disease outbreaks.

Large patches (over 100 acres) that burned at high severity in the Dixie Fire are currently characterized by very high fuel loads and are, in many cases, unlikely to regenerate forested conditions and may instead transition to different ecotypes (e.g., shrub field). One short-term direct effect of leaving areas characterized by large patches of near-complete mortality is the potential of direct harm to individuals from falling snags and debris. The retention of snags within moderate and high mortality burned areas in mosaic burn landscapes may indirectly affect raptors, such as the American goshawk, by providing foraging habitat for these species.

The Dixie Fire removed suitable habitat for species such as fisher and marten, reducing landscape and stand-scale habitat availability and connectivity. Since these patches are not likely to regenerate to late-successional forests characterized by shade intolerant, fire-adapted tree species, the loss of late-seral habitat from the Dixie fire would persist into the future to produce a landscape lacking in suitable habitat for these species.

Post-fire stands that lack ground cover and are in proximity to aquatic features could cause excessive stream and meadow sedimentation. This increase would likely persist into the future for stands that experienced near complete tree mortality as tree roots degrade and no longer prevent surface erosion. Sedimentation can degrade meadow and riparian areas important to northwestern pond turtle, willow flycatcher, and hardhead, and would be expected to decrease habitat quality and potentially result in habitat loss within the NFFRP area.

The short-term direct effects of the No Action Alternative within unburned forest stands in the NFFRP area on wildlife are similar for all species for which project effects are considered. Species associated with forest habitat during some life stage (e.g., Western bumblebee, American goshawk, Pacific fisher, sensitive bat species) would not be directly impacted by the No Action Alternative given the lack of potential for direct harm to individuals associated with project-related activities. Similarly, other species not associated with forested habitats would not incur any direct, short-term effects from the No Action Alternative applied within unburned forest habitat.

Indirect, often long-term effects (20 years or more) of the No Action Alternative within unburned forest stands in the NFFRP area are similar for species associated with forest habitats. Late successional forest habitats (CWHR size class 5), critical to the conservation of American goshawk and Pacific fisher populations, are currently rare on the NFFRP landscape. Under the No Action Alternative, growing conditions in overstocked mid-successional stands (CWHR size class 4) would continue to degrade and delay, and possibly preclude, the development of late-successional forest, thus propagating a landscape lacking in late-successional forest habitat.

Under the No Action Alternative, the current overstocking and accumulation of fuels within unburned forest stands in the NFFRP area would be expected to continue. These stand characteristics, as well as the continuity of these stands throughout the unburned portion of the project area, combine to create a landscape that is at a high and increasing risk of widespread, stand-replacing, high intensity wildfire or insect or disease outbreak. This can be equated to a risk of absolute habitat loss across an area for forest-associated species, which can be reliably expected to decrease landscape occupancy and may create barriers to movement, thus subdividing and creating small, disjunct localized populations and threatening the viability of these species.

References

- Agee, J. K., & Skinner, C. N. (2005). Basic principles of forest fuel reduction treatments. *Forest Ecology and Management*, 211(1-2), 83-96.
<https://doi.org/10.1016/j.foreco.2005.01.034>
- Anderson-Teixeira, K. J., Miller, A. D., Mohan, J. E., Hudiburg, T. W., Duval, B. D., & Delucia, E. H. (2013). Altered dynamics of forest recovery under a changing climate. *Glob Chang Biol*, 19(7), 2001-2021. <https://doi.org/10.1111/gcb.12194>
- Beaty, R. M., and A. H. Taylor. 2007. "Fire Disturbance and Forest Structure in Old-Growth Mixed Conifer Forests in the Northern Sierra Nevada, California." *Journal of Vegetation Science* 18(6): 879–890. Available at:
<https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1654-1103.2007.tb02604.x>
- Brodie, E. G., Knapp, E. E., Brooks, W. R., Drury, S. A., & Ritchie, M. W. (2023). Forest thinning and prescribed burning treatments reduce wildfire severity and buffer the impacts of severe fire weather. *Ecological Applications*, 33(3), e2801.
<https://doi.org/10.1002/eap.2801>
- California Air Resources Board. (2022). California's Regional Haze Plan for the Second Implementation Period. Retrieved from
<https://ww2.arb.ca.gov/sites/default/files/2023-01/CA2ndRegionalHazePlan.pdf>
- California Air Resources Board. (2022). Wood Stove Change-Out Program for Greater Portola Nonattainment Area and Progress Reports. Retrieved from
<https://ww2.arb.ca.gov/resources/documents/wood-stove-change-out-program-greater-portola-nonattainment-area-and-progress>
- Carter, M. C., & Darwin Foster, C. (2004). Prescribed burning and productivity in southern pine forests: a review. *Forest Ecology and Management*, 191(1-3), 93-109.
<https://doi.org/10.1016/j.foreco.2003.11.006>
- Council on Environmental Quality (2022). Climate and Economic Justice Screening Tool, version 1.0. As reported by the CWDG Data Tool, (<https://wildfirerisk.org/cwdg-tool/6063>)
- Dawson, N. G., and J. A. Cook. 2012. Behind the genes: diversification of North American martens (*Martes americana* and *M. caurina*). Pages 23-38 in K. B. Aubry, W. J. Zielinski, M. G. Raphael, and S. W. Buskirk, editors. *Biology and conservation of*

martens, sables, and fishers: a new synthesis. Cornell University Press, Ithaca, New York.

- D'Amato, A. W., Bradford, J. B., Fraver, S., & Palik, B. J. (2011). Forest management for mitigation and adaptation to climate change: Insights from long-term silviculture experiments. *Forest Ecology and Management*, 262(5), 803-816.
<https://doi.org/10.1016/j.foreco.2011.05.014>
- Domke, G., Walters, B. F., Giebink, C. L., Greenfield, E. J., Smith, J. E., Nichols, M. C., Knott, J. A., Ogle, S. M., Coulston, J. W., & Steller, J. (2023). Greenhouse Gas Emissions and Removals From Forest Land, Woodlands, Urban Trees, and Harvested Wood Products in the United States, 1990–2021 USDA Forest Service Washington Office Resource Bulletin WO-101.
- Donovan, V. M., Roberts, C. P., Fogarty, D. T., Wedin, D. A., & Twidwell, D. (2022). Targeted grazing and mechanical thinning enhance forest stand resilience under a narrow range of wildfire scenarios. *Ecosphere*, 13(5). <https://doi.org/10.1002/ecs2.4061>
- Drew, T.J., Flewelling, J.W., 1979. Stand density management: an alternative approach and its application to Douglas-fir plantations. *Forest Science*, 25, 518-532.
- EPA. (2023). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2021 U.S. Environmental Protection Agency, EPA 430-R-23-002.
<https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2021>
- Flores, D. Alexander; Poloni, Adrian L.; Frankel, Susan J.; Cobb, Richard C. 2023. Changes to relative stand composition after almost 50 years of *Heterobasidion* root disease in California true fir and pine forests. *Forest Pathology*. 53(3): 992.
- Frame, P.F., H.D. Cluff, and D.S. Hik. 2007. Response of wolves to experimental disturbance at homesites. *Journal of Wildlife Management* 71(2):316-320.
- Green, G. A., H. L. Bombay, and M. L. Morrison. 2003. Conservation assessment of the willow flycatcher in the Sierra Nevada. Foster Wheeler Environmental Corporation report to USDA Forest Service, Region 5.
- Grigal, D. "Effects of extensive forest management on soil productivity." *Forest Ecology and Management (F)*, 2000: 167-185.

- Gutiérrez, R.J.; Manley, Patricia N.; Stine, Peter A., tech. eds. 2017. The California spotted owl: current state of knowledge. Gen. Tech. Rep. PSW-GTR-254. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 294 p.
- Hagmann, R. K., Hessburg, P. F., Prichard, S. J., Povak, N. A., Brown, P. M., Fulé, P. Z., Keane, R. E., Knapp, E. E., Lydersen, J. M., Metlen, K. L., Reilly, M. J., Sánchez Meador, A. J., Stephens, S. L., Stevens, J. T., Taylor, A. H., Yocom, L. L., Battaglia, M. A., Churchill, D. J., Daniels, L. D., Falk, D. A., Henson, P., Johnston, J. D., Krawchuk, M. A., Levine, C. R., Meigs, G. W., Merschel, A. G., North, M. P., Safford, H. D., Swetnam, T. W., & Waltz, A. E. M. (2021). Evidence for widespread changes in the structure, composition, and fire regimes of western North American forests. *Ecological Applications*, 31(8), e02431. <https://doi.org/10.1002/eap.2431>
- Hessburg, P. F., J. K. Agee, and J. F. Franklin. 2005. Dry Forests and Wildland Fires of the Inland Northwest USA: Contrasting the Landscape Ecology of the Pre-Settlement and Modern Eras. *Forest Ecology Management* 211(1-2): 117–139.
- Hessburg, P. F., Prichard, S. J., Hagmann, R. K., Povak, N. A., & Lake, F. K. (2021). Wildfire and climate change adaptation of western North American forests: A case for intentional management. *Ecological Applications*, 31(8), e02432. <https://doi.org/10.1002/eap.2432>
- Hessburg, P. F., Prichard, S. J., & Hagmann, R. K. (2023). Comment on Baker et al. 2023: Countering omitted evidence of variable historical forests and fire regime in western USA dry forests: The low-severity-fire model rejected. *Fire*, 6(4), 146. <https://doi.org/10.3390/fire6040146>
- Hunter, M. E., & Robles, M. D. (2020). Tamm review: The effects of prescribed fire on wildfire regimes and impacts: A framework for comparison. *Forest Ecology and Management*, 475. <https://doi.org/10.1016/j.foreco.2020.118435>
- Hurteau, M., & North, M. (2008). Fuel treatment effects on tree-based forest carbon storage and emissions under modeled wildfire scenarios. *Frontiers in Ecology and the Environment*, 7(8), 409-414. <https://doi.org/10.1890/080049>
- Jones, G. M., Vraga, E. K., Hessburg, P. F., Hurteau, M. D., Allen, C. D., Keane, R. E., Spies, T. A., North, M. P., Collins, B. M., Finney, M. A., Lydersen, J. M., & Westerling, A. L. (2022). Counteracting wildfire misinformation. *Frontiers in Ecology and the Environment*, 20(7), 392–393. <https://doi.org/10.1002/fee.2553>

- Kaarakka, L., Cornett, M., Domke, G., Ontl, T., & Dee, L. E. (2021). Improved forest management as a natural climate solution: A review. *Ecological Solutions and Evidence*, 2(3). <https://doi.org/10.1002/2688-8319.12090>
- Kalies, E. L., and L. L. Yocom Kent. 2016. Tamm Review. Are Fuel Treatments Effective at Achieving Ecological and Social Objectives? A Systematic Review. *Forest Ecology and Management* 375(September 1, 2016): 84–95.
- Kovacs, K. E., K.E. Converse, M.C. Stopher, J.H. Hobbs, M.L. Sommer, P.J. Figura, D.A. Applebee, D.L. Clifford, and D.J. Michaels. 2016. Conservation Plan for Gray Wolves in California. California Department of Fish and Wildlife, Sacramento, CA 329 pp.
- Larson, A. J., R. T. Belote, C. A. Cansler, S. A. Parks, and M. S. Dietz. 2013. Latent Resilience in Ponderosa Pine Forest: Effects of Resumed Frequent Fire. *Ecological Applications* 23:1243–1249.
- Lauvaux, C.A., Skinner, C.N., Taylor, A.H., 2016. High severity fire and mixed conifer forest-chaparral dynamics in the southern Cascade Range, USA. *Forest Ecology and Management*, Volume 363.
- Liu, X., et al. 2017. Airborne measurements of western U.S. wildfire emissions: Comparison with prescribed burning and air quality implications, *J. Geophys. Res. Atmos.*, 122, 6108–6129.
- Loffland, H., R. Siegel, C. Stermer, R. Burnett, B. Camposa, and T. Mark. 2014. Assessing willow flycatcher population size and distribution to inform meadow restoration priorities in the Sierra Nevada and southern Cascades. The Institute for Bird Populations, Point Reyes Station, California, USA.
- Long, J.N., Shaw, J.D., 2005. A density management diagram for even-aged ponderosa pine stands. *Western Journal of Applied Forestry*, 20 (4), 205-215.
- Mallek, C., H. Safford, J. Viers, and J. Miller. 2013. Modern Departures in Fire Severity and Area Vary by Forest Type, Sierra Nevada and Southern Cascades, California, USA. *Ecosphere* 4: 1–28.
- McKinley, D. C., Ryan, M. G., Birdsey, R. A., Giardina, C. P., Harmon, M. E., Heath, L. S., Houghton, R. A., Jackson, R. B., Morrison, J. F., Murray, B. C., Patakl, D. E., & Skog, K. E. (2011). A synthesis of current knowledge on forests and carbon storage in the United States. *Ecol Appl*, 21(6), 1902-1924. <https://doi.org/10.1890/10-0697.1>

- Millar, C. I., Stephenson, N. L., & Stephens, S. L. (2007). Climate change and forests of the future: managing in the face of uncertainty. *Ecol Appl*, 17(8), 2145-2151.
<https://doi.org/10.1890/06-1715.1>
- Mountain Counties Funding Area, Integrated Regional Water Management Disadvantaged Community Involvement Program (2021). Community Well-Being and Water and Wastewater Needs Assessments for The Mountain Counties Funding Area. Prepared by the Sierra Institute for Community and Environment and Sierra Water Workgroup.
- National Forest Management Act (NFMA) of 1976 (P.L. 94-588).
- Neary et al. "Fire effects on belowground sustainability: a review and synthesis." *Forest Ecology and Management*, 1999: 51-71.
- North, M.P, Tompkins, R.E., Bernal, A.A., Collins, B.M., Stephens, S.L., York, R.A, 2022. Operational resilience in western US frequent-fire forests. *Forest Ecology and Management*, Volume 507.
- Ontl, T. A., Janowiak, M. K., Swanston, C. W., Daley, J., Handler, S., Cornett, M., Hagenbuch, S., Handrick, C., McCarthy, L., & Patch, N. (2020). Forest Management for Carbon Sequestration and Climate Adaptation. *Journal of Forestry*, 118(1), 86-101.
<https://doi.org/10.1093/jofore/fvz062>
- Poland, T. M., Patel-Weynand, T., Finch, D. M., Ford Miniati, C., Hayes, D. C., & Lopez, V. M. (Eds.). (2021). *Invasive Species in Forests and Rangelands of the United States: A Comprehensive Science Synthesis for the United States Forest Sector*.
<https://doi.org/https://doi.org/10.1007/978-3-030-45367-1>.
- Poloni, A. L., Garbelotto, M., Lee, C. A., & Cobb, R. C., 2021. Efficacy of Chemical and Biological Stump Treatments for the Control of *Heterobasidion occidentale* Infection of California *Abies concolor*. *Pathogens*, 10(11).
- Prichard, S. J., Hessburg, P. F., Hagmann, R. K., Povak, N. A., Dobrowski, S. Z., Hurteau, M. D., Kane, V. R., Keane, R. E., Kobziar, L. N., Kolden, C. A., North, M., Parks, S. A., Safford, H. D., Stevens, J. T., Yocom, L. L., Churchill, D. J., & Gray, R. W. (2021). Adapting western North American forests to climate change and wildfires: 10 common questions. *Ecological Applications*, 31(8), e02433. <https://doi.org/10.1002/eap.2433>
- Safford, Hugh D.; Stevens, Jens, T. 2017. Natural range of variation for yellow pine and mixed-conifer forests in the Sierra Nevada, southern Cascades, and Modoc and Inyo National Forests, California, USA. Gen. Tech. Rep. PSW-GTR-256. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 229 p.

- Schuman, G. E., Janzen, H. H., & Herrick, J. E. (2002). Soil carbon dynamics and potential carbon sequestration by rangelands. *Environ Pollut*, 116(3), 391-396.
[https://doi.org/10.1016/s0269-7491\(01\)00215-9](https://doi.org/10.1016/s0269-7491(01)00215-9)
- SERA 1997. Use and Assessment of Marker Dyes Used with Herbicides. Prepared by Michelle Pepling, Phillip H. Howard, and Patrick R. Durkin. Submitted by Syracuse Environmental Research Associates, Inc., Fayetteville, New York to USDA Animal and Plant Health Inspection Service.
- Stephens, S. L., J. M. Lydersen, B. M. Collins, D. L. Fry, and M. D. Meyer. 2015. Historical and Current Landscape-Scale Ponderosa Pine and Mixed Conifer Forest Structure in the Southern Sierra Nevada. *Ecosphere* 6(5):79.
- Stephens, S. L., J. D. Miller, B. M. Collins, M. P. North, J. J. Keane, and S. L. Roberts. 2016. Wildfire Impacts on California Spotted Owl Nesting Habitat in the Sierra Nevada. *Ecosphere* 7(11): article e01478
- Stevens-Rumann, C. S., & Morgan, P. (2019). Tree regeneration following wildfires in the western US: a review. *Fire Ecology*, 15(1), 1-17.
- Storer, T. I., and R. L. Usinger. 1963. *Sierra Nevada Natural History: An Illustrated Handbook*.
- Truex, R., & Zielinski, W. 2013. Short-term effects of fuel treatments on fisher habitat in the Sierra Nevada, California, 10.1016/j.foreco.2012.12.035, 293, (85-91). *Forest Ecology and management*.
- U.S. Census Bureau. (2021). American Community Survey. Washington, DC. As reported by the CWDG Data Tool, <https://wildfirerisk.org/cwdg-tool/6063>
- USDA Forest Service. N.d. Electronic bicycle use. <https://www.fs.usda.gov/visit/e-bikes>
- USDA Forest Service, 1988. Plumas National Forest, Land and Resource Management Plan (LRMP). Pacific Southwest Region, Forest Service, Vallejo, CA.
- USDA Forest Service. 1989. Chief Dale Robertson letter to regional foresters, station directors, and WO staff regarding national forest old-growth values and the generic definition and description of old-growth forests. Dated October 11, 1989.
- USDA Forest Service. 2001. Sierra Nevada Forest Plan Amendment (SNFPA) Final Environmental Impact Statement (FEIS) and Record of Decision (ROD). USDA Forest Service, Pacific Southwest Region. Vallejo, CA. January 2001.

- USDA Forest Service. 2004. Sierra Nevada Forest Plan Amendment (SNFPA), Final Supplemental Environmental Impact Statement and Record of Decision (ROD). Pacific Southwest Region, Forest Service, Vallejo, CA.
- USDA Forest Service. 2007. Record of Decision, Sierra Nevada Forests Management Indicator Species Amendment. U.S. Forest Service, Pacific Southwest Region. December 2007. 18pp.
- USDA Forest Service Manual 2600. Wildlife, Fish, and Sensitive Plant Habitat Management.
- USDA Forest Service. 2019. Conservation Strategy for the California spotted owl (*Strix occidentalis occidentalis*) in the Sierra Nevada. Publication R5-TP-043.
- USDA Forest Service. 2020. Tahoe National Forest Climate Change Trend Summary. Region 5 Ecology Program. Available at: <https://yubariver.org/tahoe-national-forest-climate-change-summary-2020/>
- USDA Forest Service. 2021. Postfire restoration framework for national forests in California. General Technical Report. PSW-GTR-270. Pacific Southwest Research Station, Albany, CA.
- USDA Forest Service 2021b. Analysis of Issues Surrounding the Use of Spray Adjuvants with Herbicides. 2021 Revision. David Bakke, Pacific Southwest Regional Pesticide-Use Specialist (Retired), USDA Forest Service 143 pp.
- USDA Forest Service. 2021c. Priorities for borate stump treatments to prevent Heterobasidion root disease (HRD). FHP Report # RO-21-02.
- USDA Forest Service. 2022. National Forest System Reforestation Strategy: Growing and Nurturing Resilient Forests USDA Forest Service National Forest System. FS-1198.
- USDA Forest Service. 2022. Post-fire Restoration Opportunities for Conifer Forest in the 2021 Dixie and Sugar Fires. Sierra Cascade Province Ecology Program, Region 5. November 15, 2022.
- USDA Forest Service. 2022b. Post-fire Restoration Opportunities for California Spotted Owl in the 2021 Dixie and Sugar Fires. Plumas and Lassen National Forests. Region 5 Ecology Program, Sierra Cascade Province. February 4, 2022. 23 pages.
- USDA Forest Service. 2022c. RAVG Thematic Percent Change in Composite Burn Index (CBI-4). Rapid Assessment of Vegetation Condition after Wildfire (RAVG) program.

USDA Forest Service. 2022d. Hazard Tree Identification and Mitigation. Pacific Southwest Region, Report RO-22-01

USDA Forest Service. 2023a. Deputy Chief Christopher French letter to regional foresters regarding review of proposed projects with management of old growth forest conditions. Dated December 18, 2023.

USDA Forest Service. 2023b. Plumas National Forest. Heritage Implementation Plan for Plumas National Forest Protect and Recover Project Pursuant to the 2021 National Programmatic Agreement Among the U. S. Department of Agriculture Forest Service, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers for Phasing Section 106 of the National Historic Preservation Act for Large-Scale Multi-Year Undertakings. On file with the Plumas National Forest.

USDA Forest Service. 2024a. Mature and Old-Growth Forests: Definition, Identification, and Initial Inventory on Lands Managed by the Forest Service and Bureau of Land Management. FS-1215a.

USDA Forest Service. 2024b. PNF Forest Supervisor Christopher Carlton letter to PNF employees regarding guidance on old growth management under Region 5 definition and interim policy. Dated August 30, 2024.

USDA Forest Service. 2025. Fourth Amended Programmatic Agreement Among the U.S.D.A. Forest Service, Pacific Southwest Region (Region 5), California State Historic Preservation Officer, Nevada State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Process for Compliance with Section 106 of the National Historic Preservation Act for Management of Historic Properties by the National Forests of the Pacific Southwest Region. On file with Plumas National Forest.

U.S. Environmental Protection Agency. (2024, February 7). NAAQS Table. Retrieved from Criteria Air Pollutants: <https://www.epa.gov/criteria-air-pollutants/naaqs-table>

Waldrop, T. A., & Goodrick, S. L. (2012). Introduction to Prescribed Fire in Southern Ecosystems
USDA Forest Service Southern Research Station

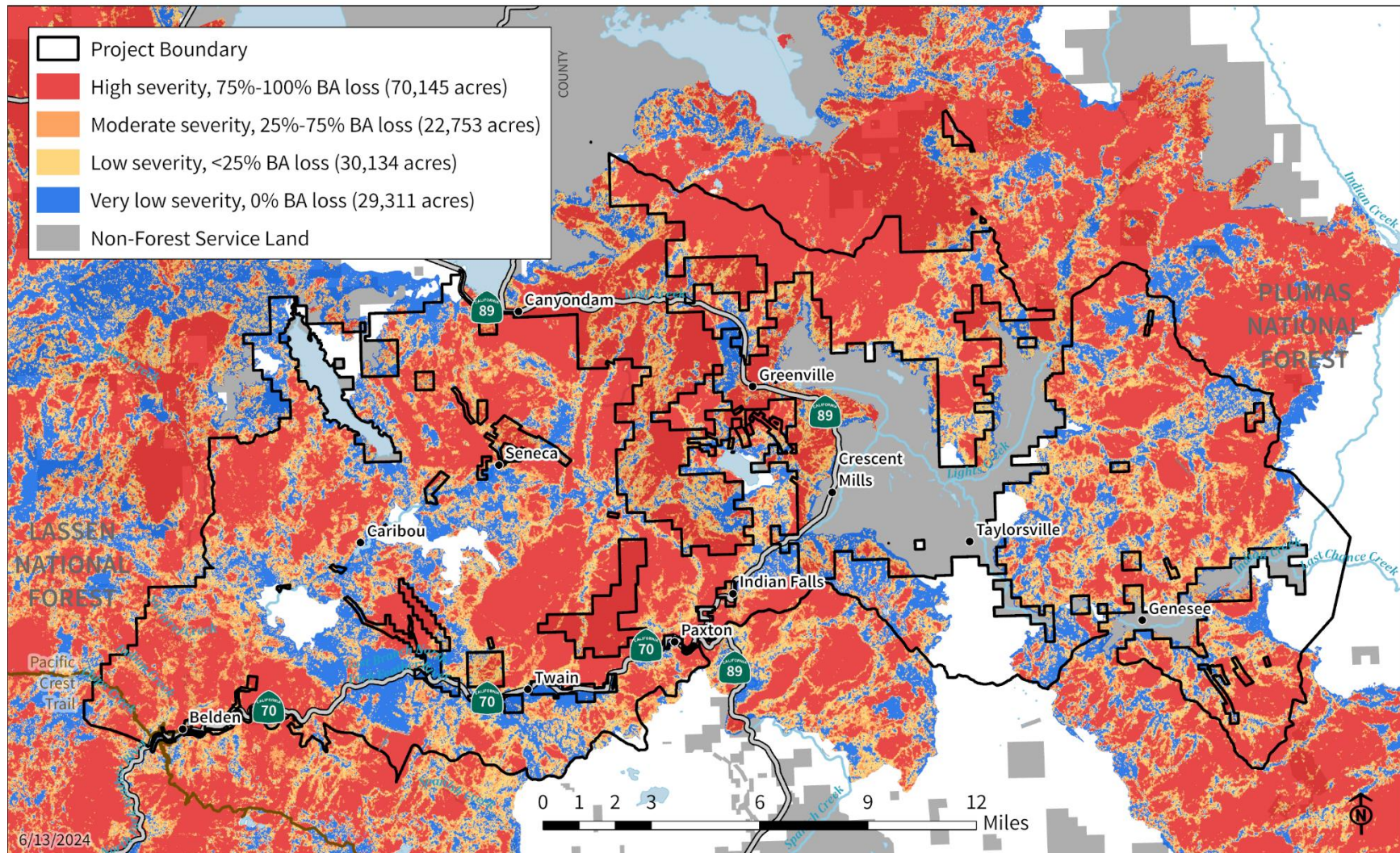
Wiedinmyer, C., & Hurteau, M. D. (2010). Prescribed fire as a means of reducing forest carbon emissions in the western United States. *Environ Sci Technol*, 44(6), 1926-1932.
<https://doi.org/10.1021/es902455e>

Appendix A: Project Maps

A- 1: 2021 Dixie Fire Burn Severity Map	140
A- 2: Map of proposed vegetation treatments within the project area (unburned or low-moderate severity burned areas)	141
A- 3: Map of the Wildland Urban Intermix (WUI) Treatment Focus Area	142
A- 4: Map of the Designated Lands Treatment Focus Area.....	143
A- 5: Map of the Cultural Stewardship Treatment Focus Area	144
A- 6: Map of the Wildlife Habitat Treatment Focus Area	145
A- 7: Map of the Fire Management Feature Treatment Focus Area.....	146
A- 8: Map of the Fire Recovery Treatment Focus Area – Post-Fire Fuels Reduction Treatments	147
A- 9: Map of the Fire Recovery Treatment Focus Area – Proposed Conifer Reforestation	148
A- 10: Map of the Recreation Treatment Focus Area – Greenville Area Proposed Trails.....	149
A- 11: Map of the Recreation Treatment Focus Area – Mt. Jura Area Proposed Trails	150

2021 Dixie Fire Burn Severity

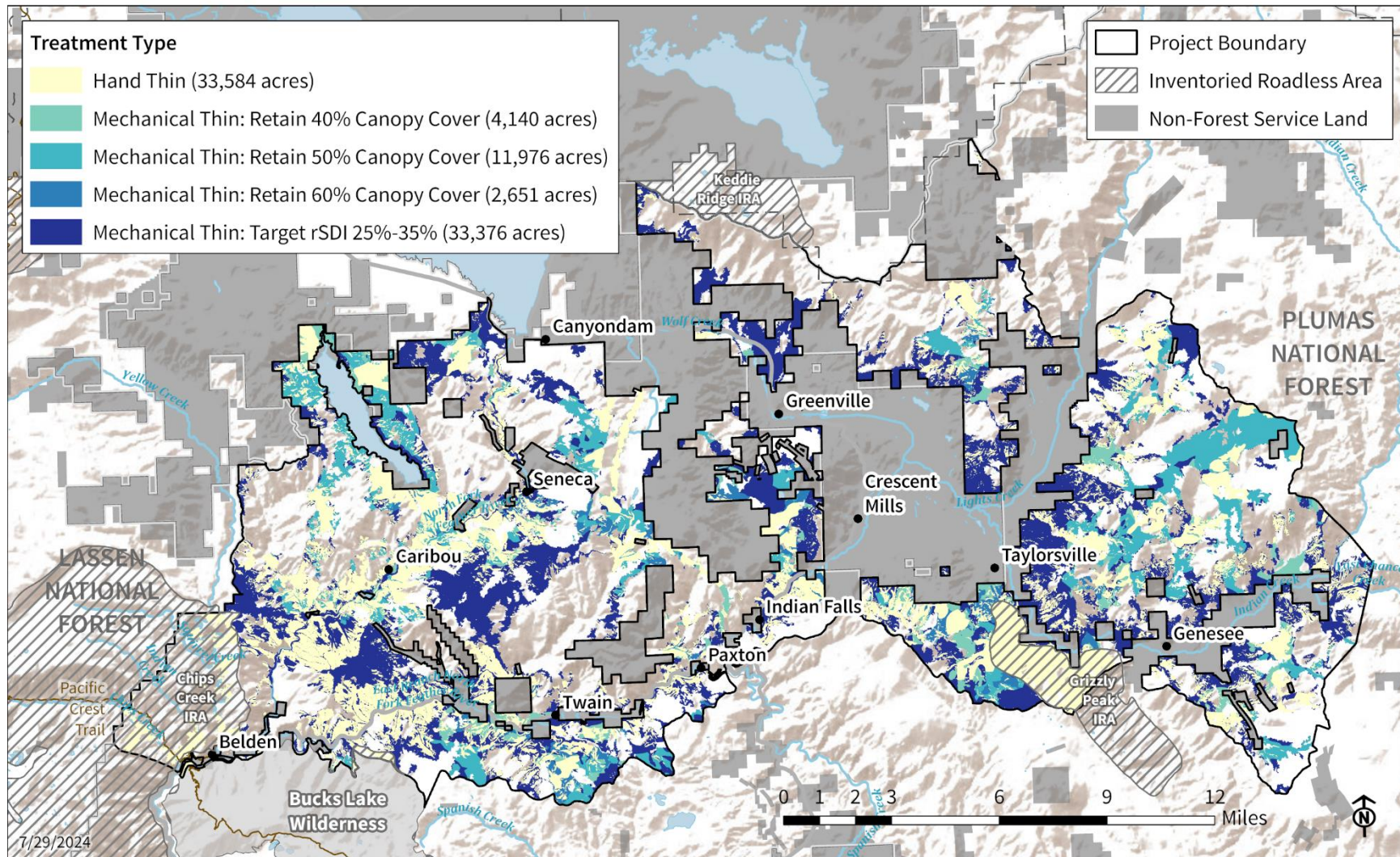
North Fork Forest Recovery Project
Plumas National Forest



A- 1: 2021 Dixie Fire Burn Severity Map

Proposed Vegetation Treatments

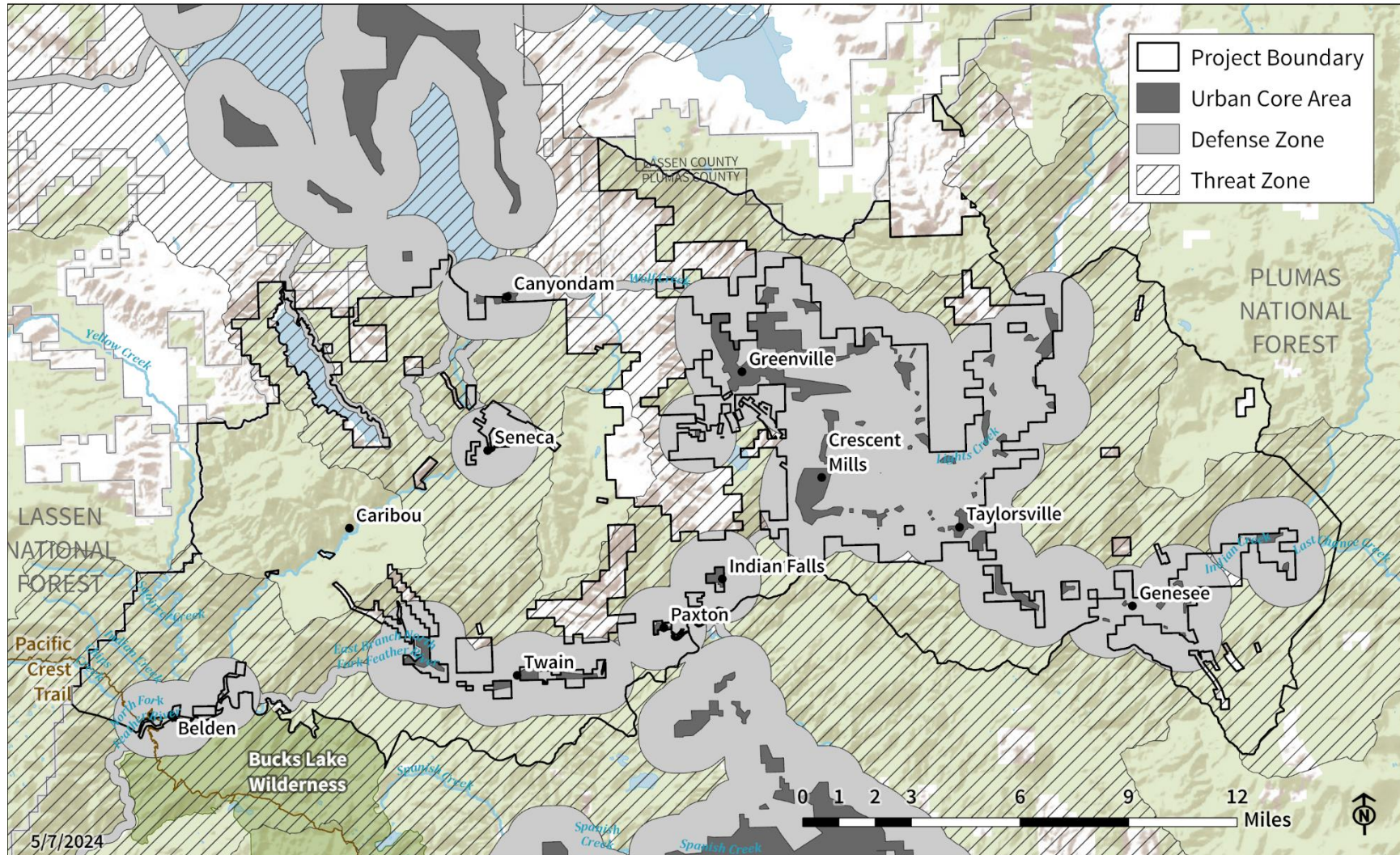
North Fork Forest Recovery Project
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A- 2: Map of proposed vegetation treatments within the project area (unburned or low-moderate severity burned areas)

Wildland-Urban Intermix (WUI)

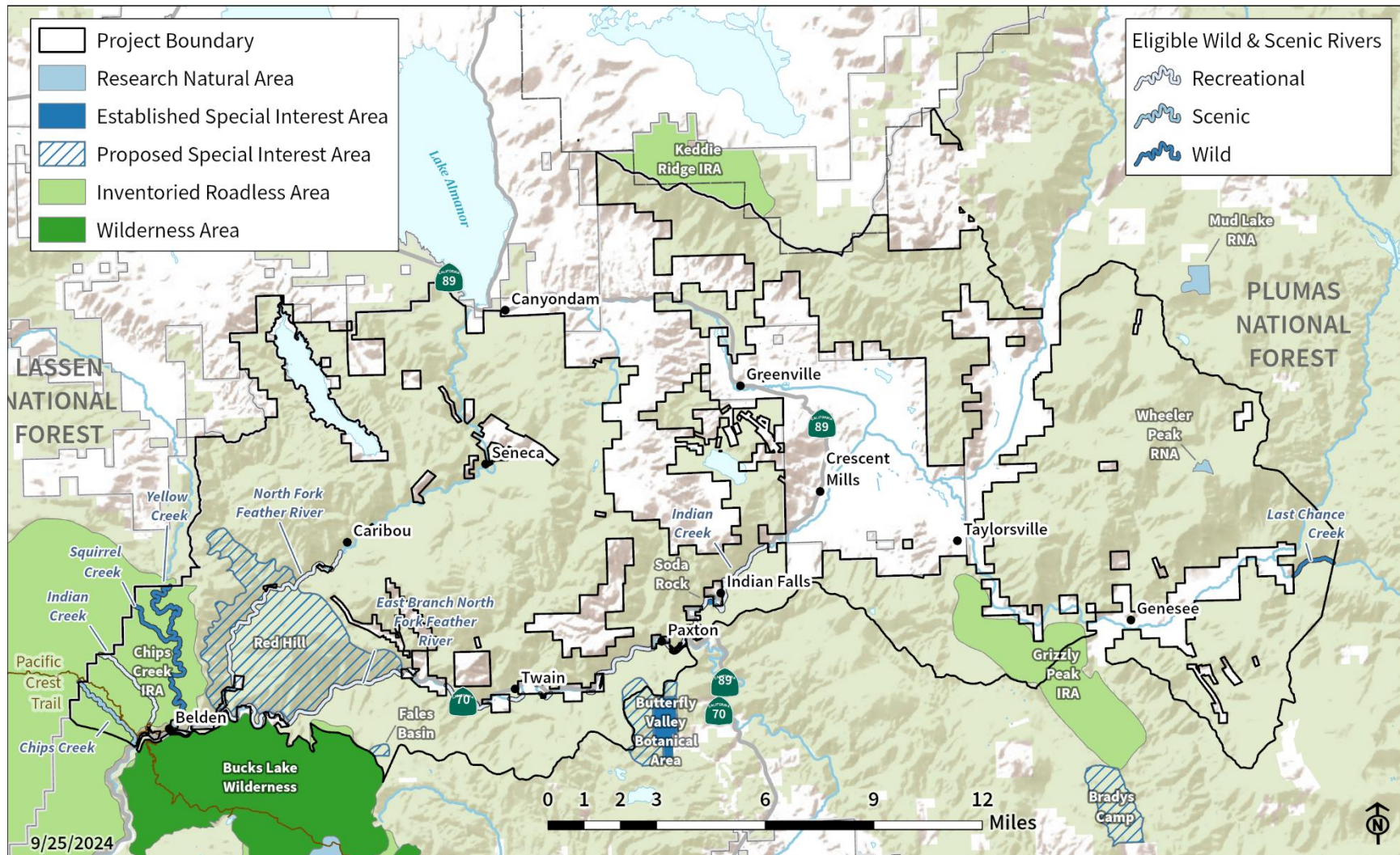
North Fork Forest Recovery Project
Plumas National Forest



A- 3: Map of the Wildland Urban Intermix (WUI) Treatment Focus Area

Designated Lands

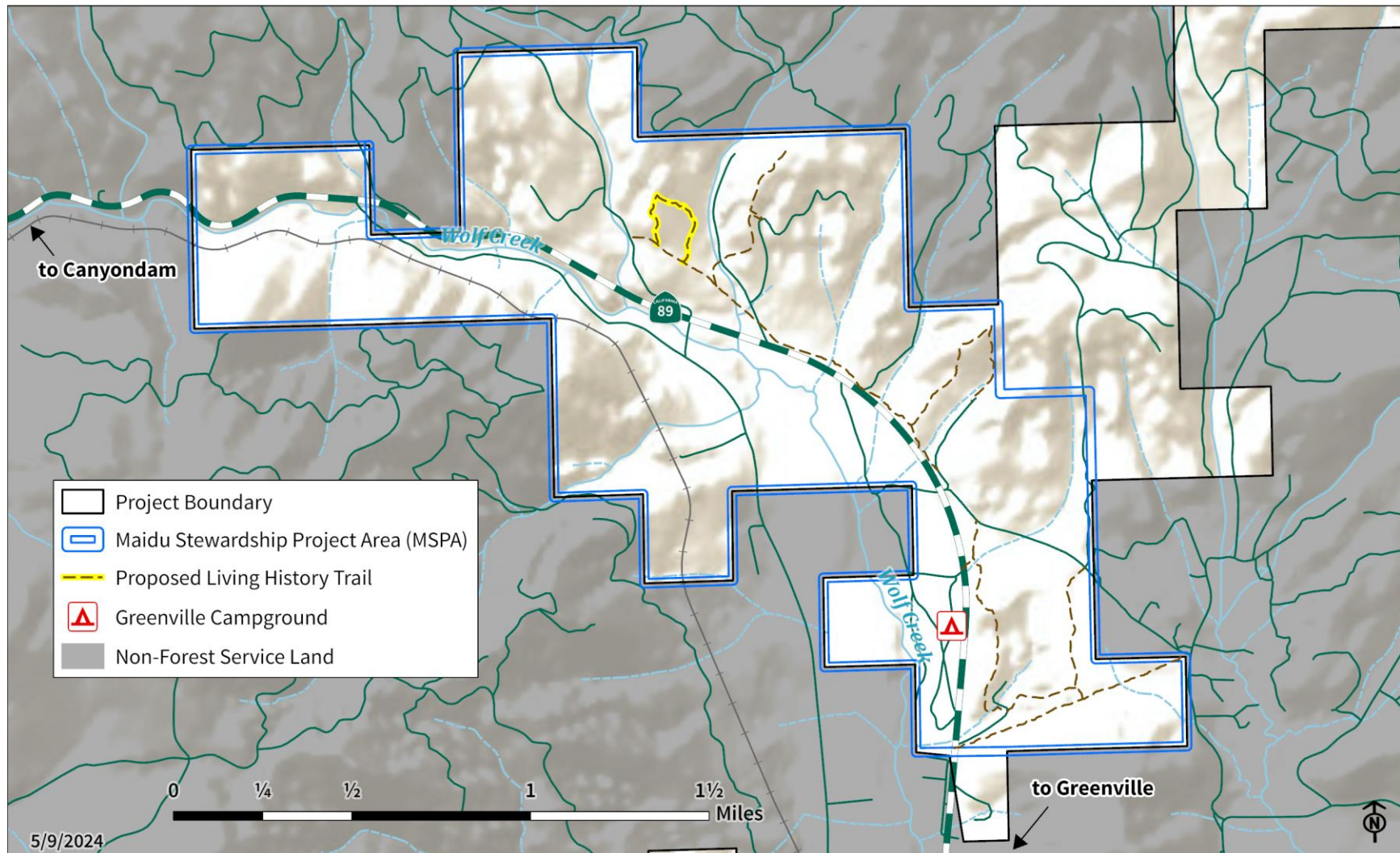
North Fork Forest Recovery Project
Plumas National Forest



A- 4: Map of the Designated Lands Treatment Focus Area

Cultural Stewardship

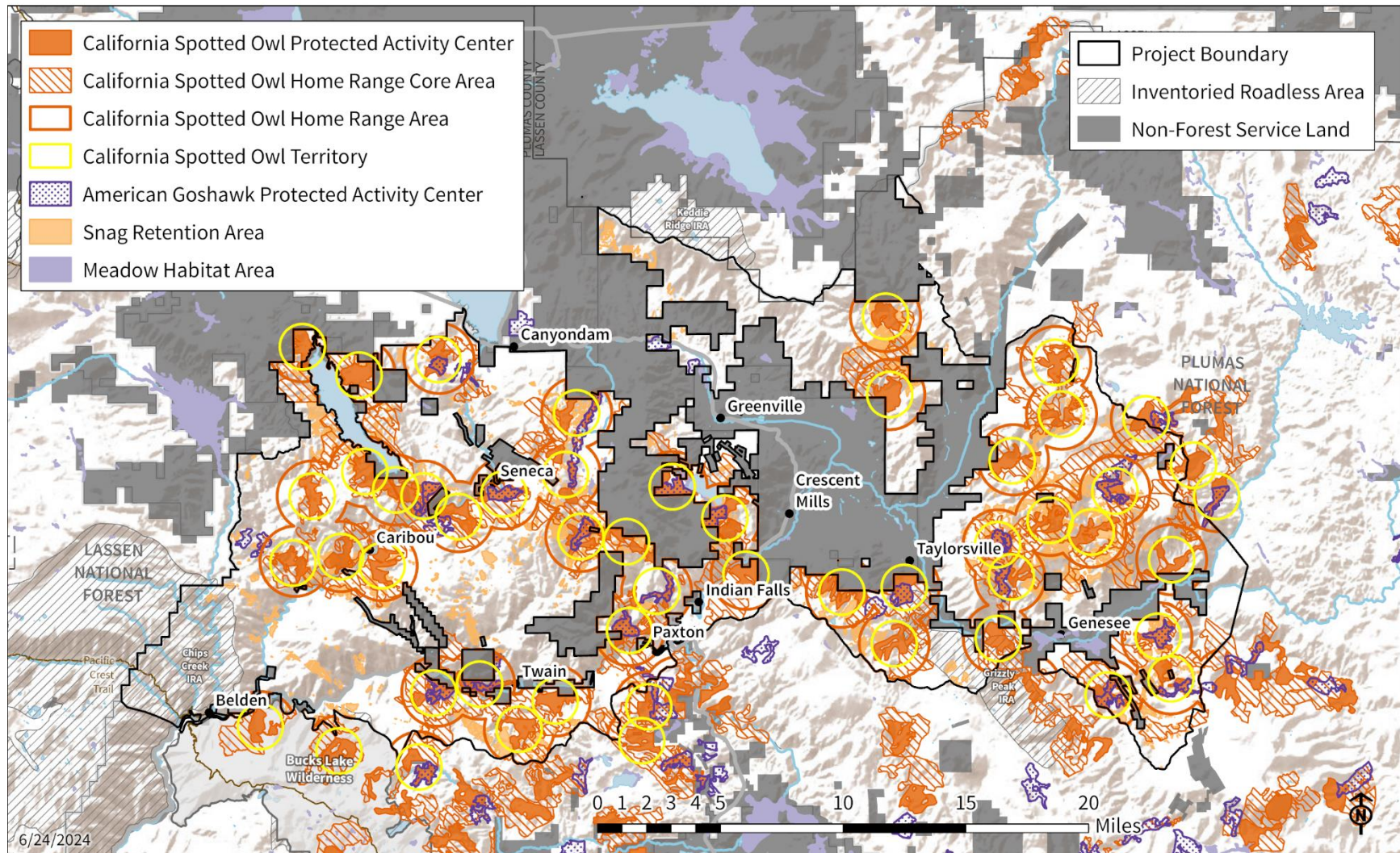
North Fork Forest Recovery Project
Plumas National Forest



A- 5: Map of the Cultural Stewardship Treatment Focus Area

Wildlife Habitat

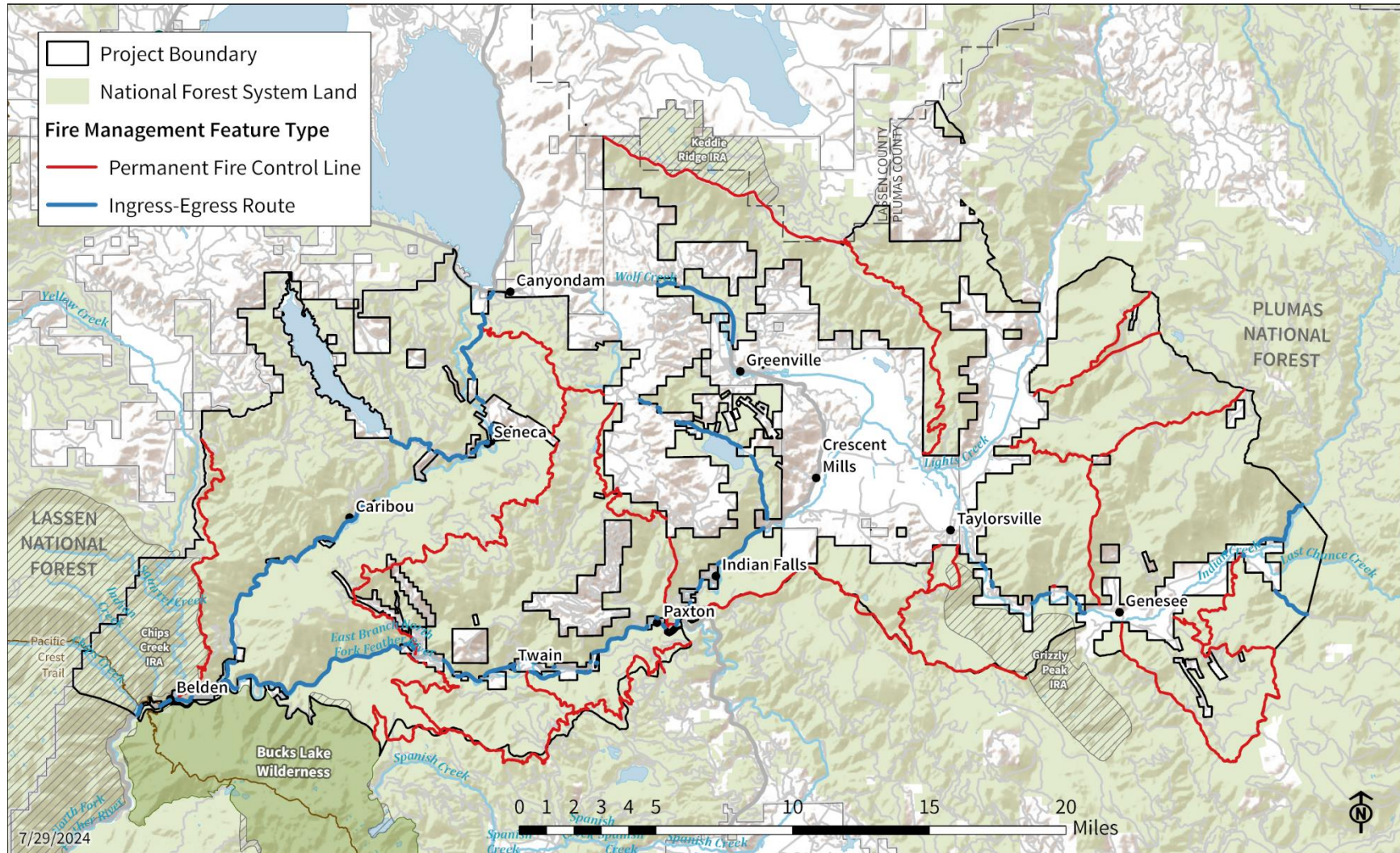
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A- 6: Map of the Wildlife Habitat Treatment Focus Area

Fire Management Features

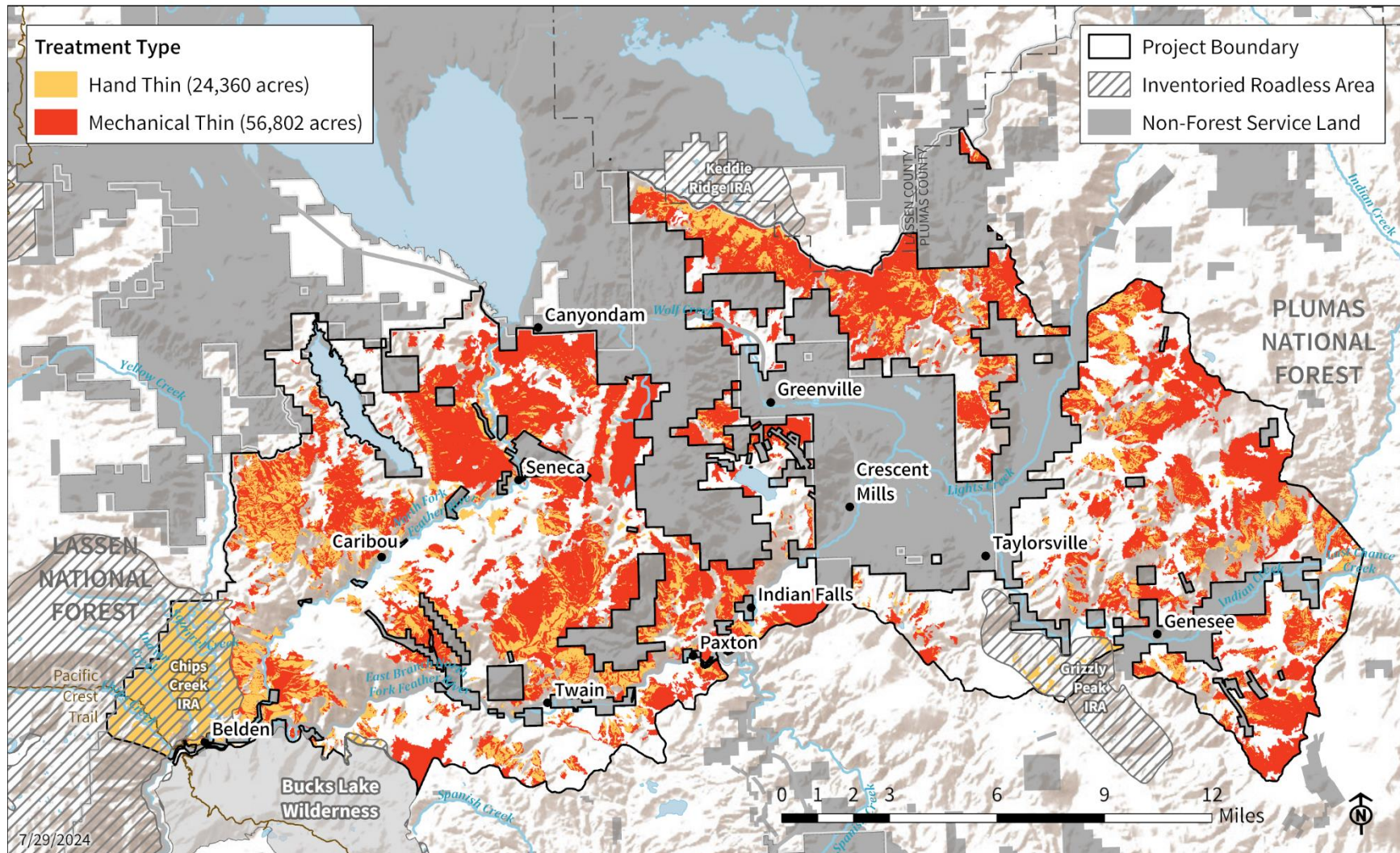
North Fork Forest Recovery Project
Plumas National Forest



A- 7: Map of the Fire Management Feature Treatment Focus Area

Proposed Post-Fire Fuels Reduction Treatments

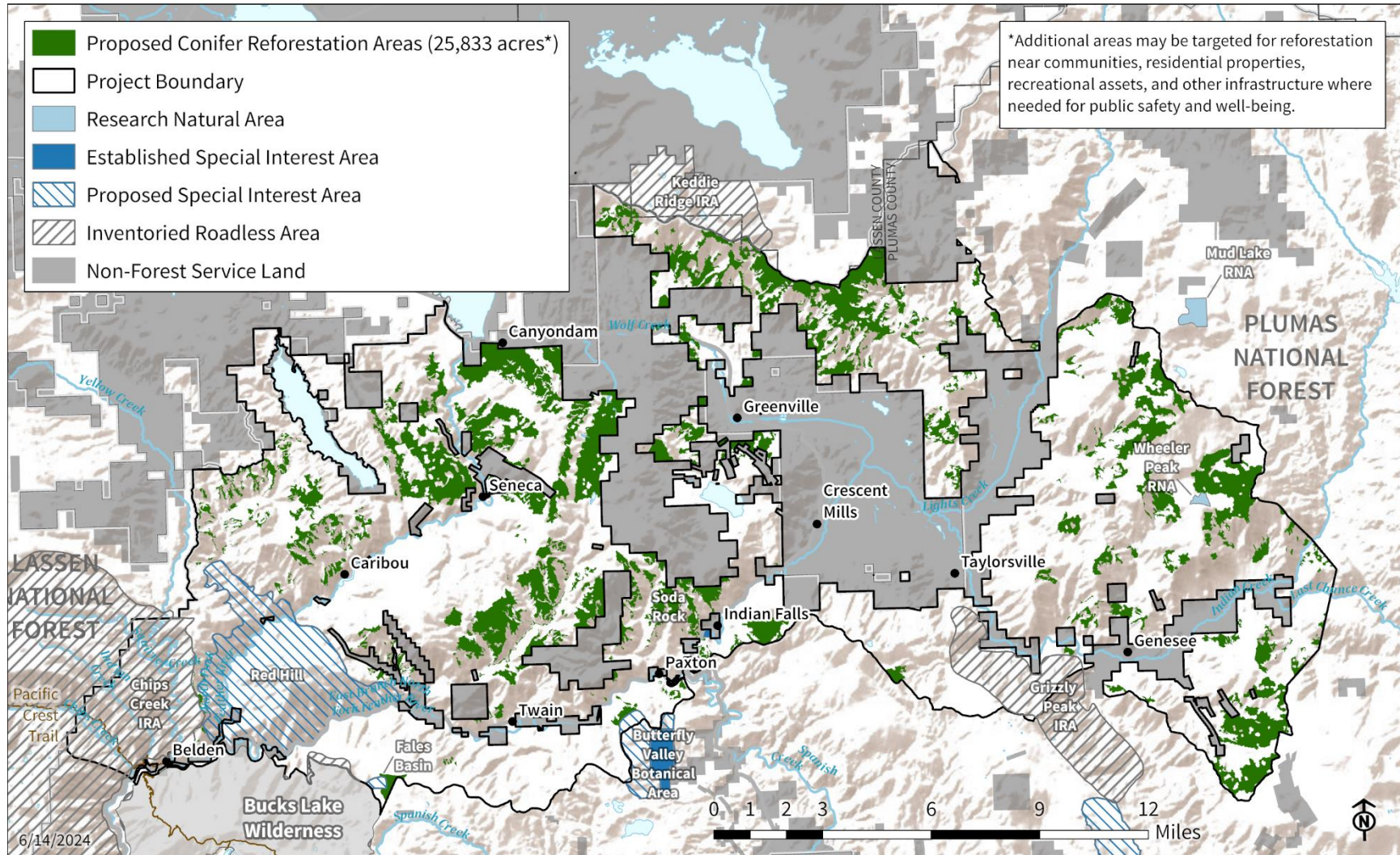
North Fork Forest Recovery Project
Plumas National Forest



A- 8: Map of the Fire Recovery Treatment Focus Area – Post-Fire Fuels Reduction Treatments

Proposed Conifer Reforestation

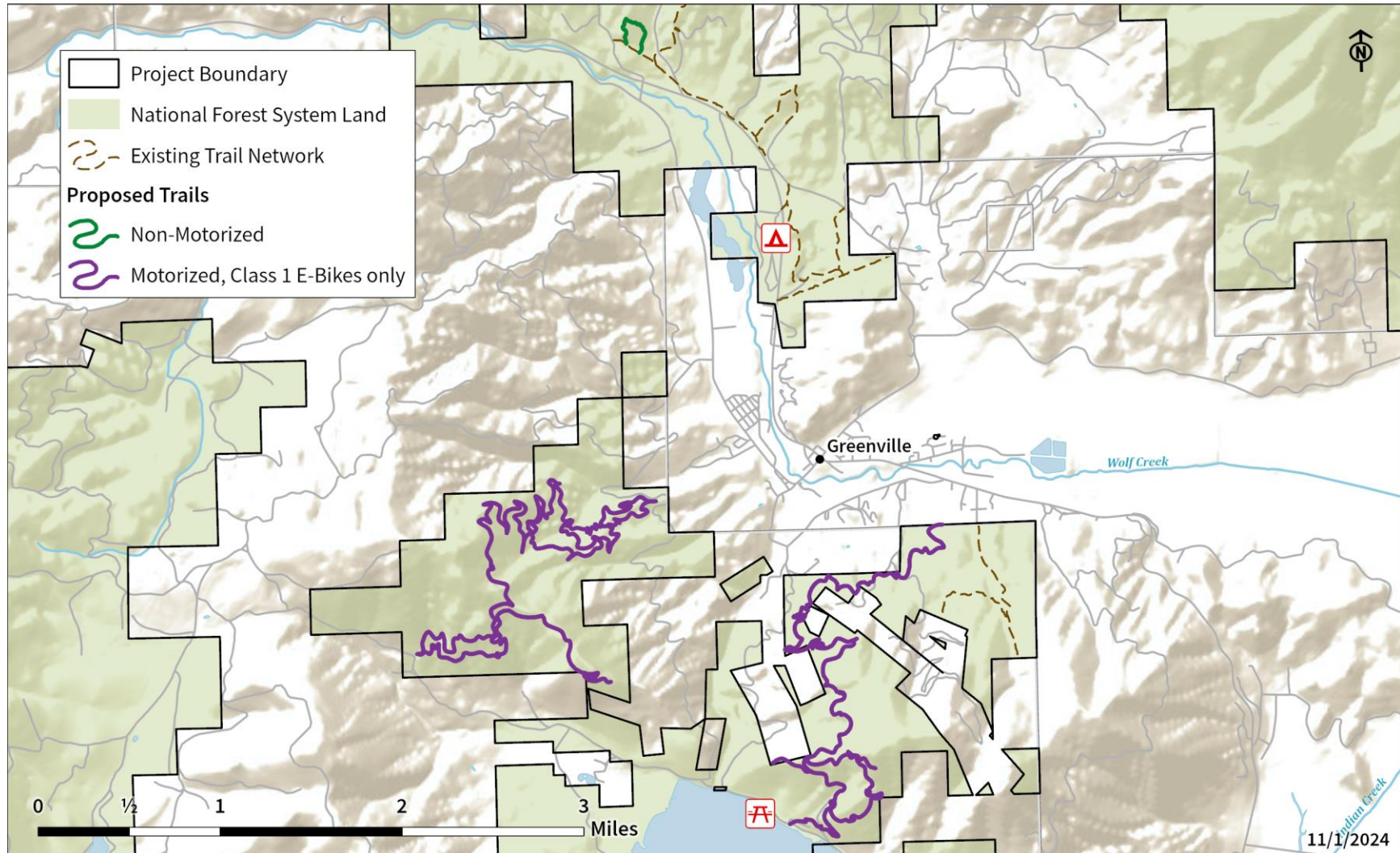
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Plumas National Forest



A- 9: Map of the Fire Recovery Treatment Focus Area – Proposed Conifer Reforestation

Recreation: Greenville Area Proposed Trails

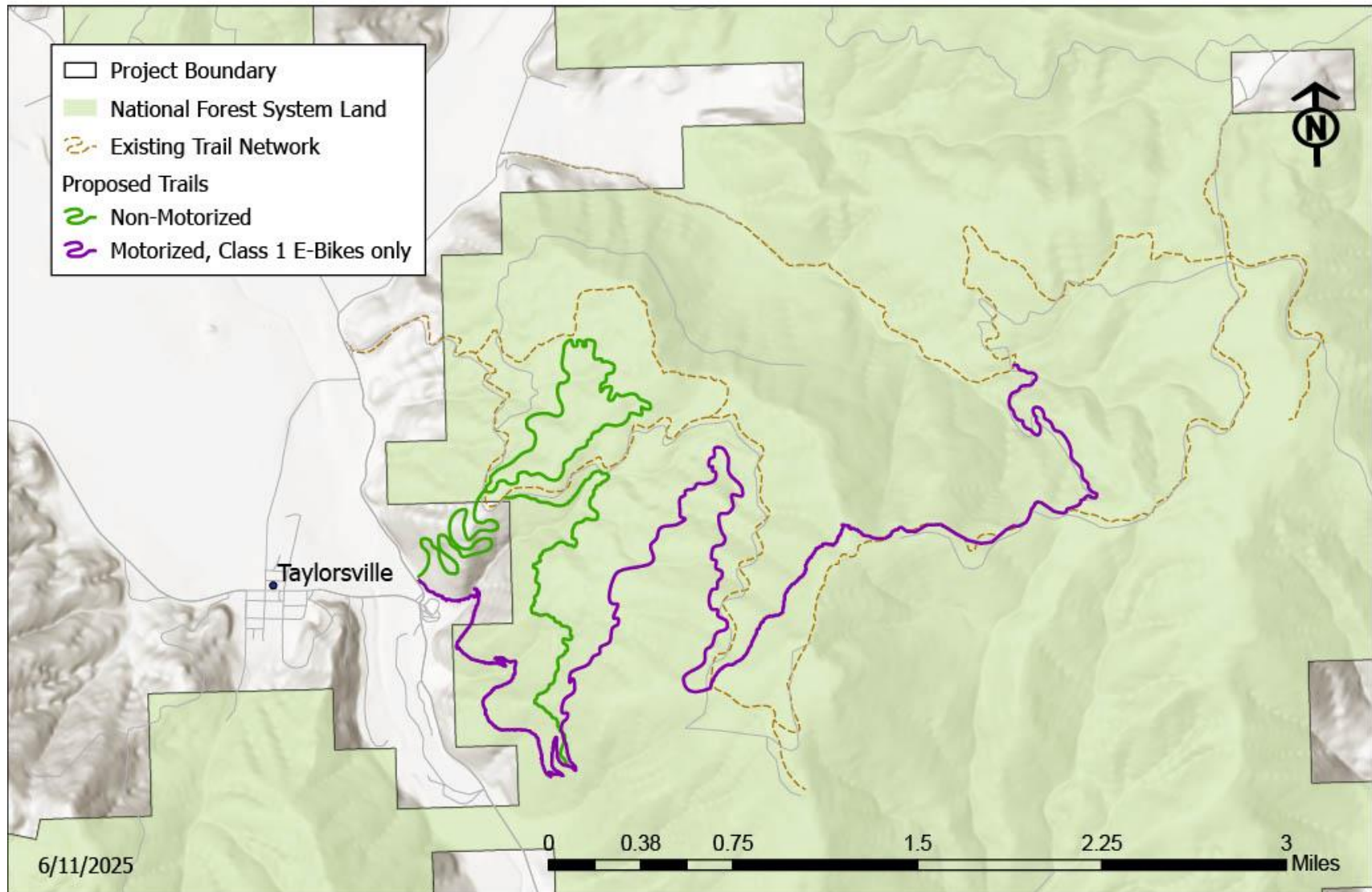
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A- 10: Map of the Recreation Treatment Focus Area – Greenville Area Proposed Trails

Recreation: Mt. Jura Area Proposed Trails

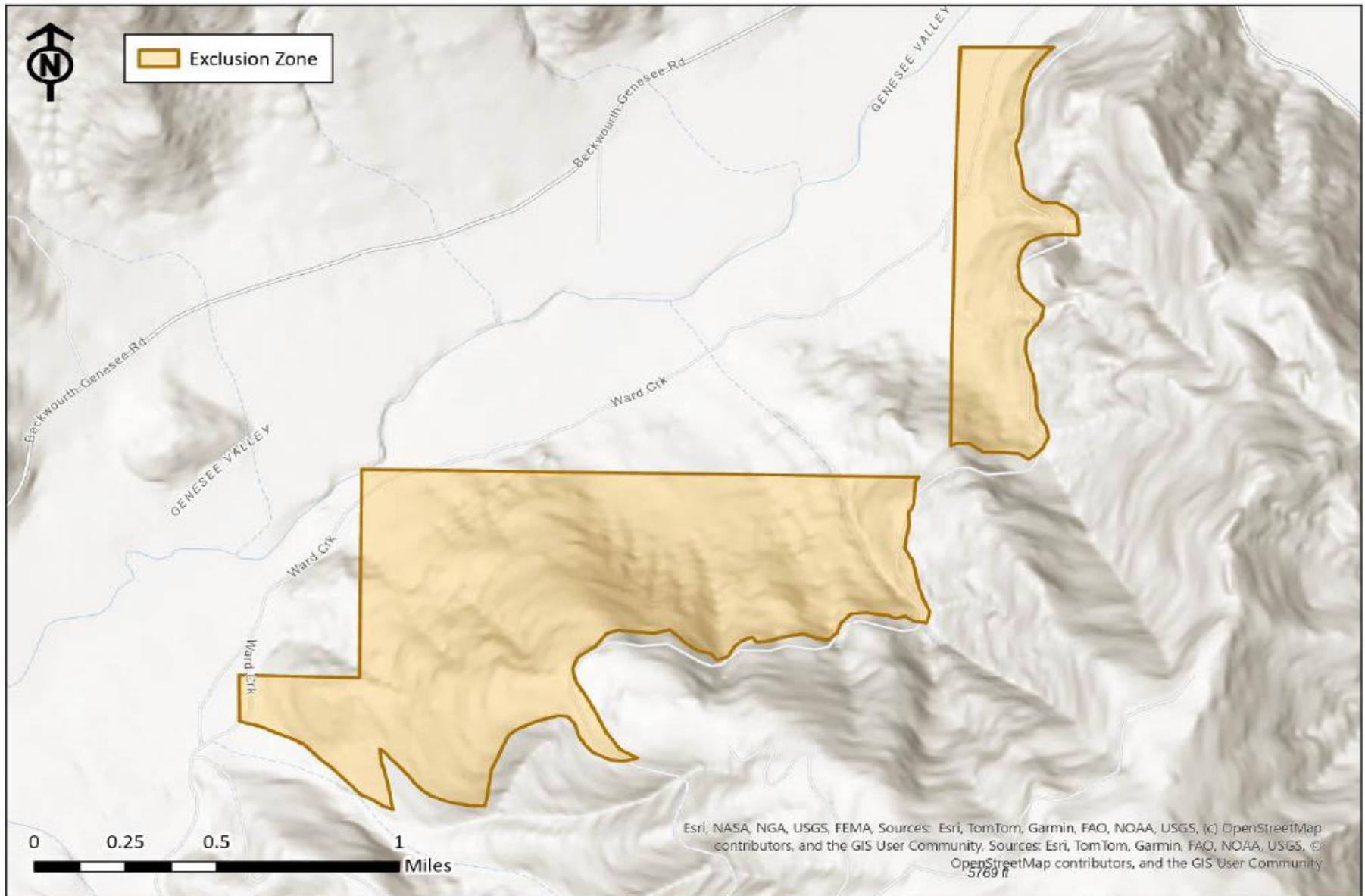
North Fork Forest Recovery Project
Plumas National Forest



11: Map of the Recreation Treatment Focus Area – Mt. Jura Area Proposed Trails

Genesee Valley Herbicide and Mechanical Treatment Exclusion Zone

North Fork Forest Recovery Project
Plumas National Forest



A-12: Map of Genesee Valley Herbicide and Mechanical Treatment Exclusion Zone

Appendix B: Project-Specific Forest Plan Amendments and Substantive Requirements

Specific Definitions for Regional California Spotted Owl Amendments

Amendment components included within this document require specific language that have meanings that may differ from other documents or applications. Table B-1 defines specific terms that are required for conformity to each component.

B- 1: Definitions used in amendments. Identification column shows how the term is emphasized in the components.

Term	Identification	Definition
Very large [trees]	very large	Trees 36 inches DBH or greater.
Large [trees]	large	Trees 30 inches DBH or greater. Includes very large trees.
Very large snags	very large snags	Snags 45 inches in diameter or greater.
High [canopy cover]	high	Canopy cover for the defined area is 60.0% or greater.
Moderate [canopy cover]	moderate	Canopy cover for the defined area is 40.0-59.9%.
Moderately high [canopy cover]	moderately high	Canopy cover for the defined area is 50.0-59.9%.
Highest Quality Nesting and Roosting Habitat	HQNR habitat	HQNR ¹⁷ habitat are areas preferred by CSO for nesting and roosting. It includes all of the following: a. Forests within CWHR classes 6, 5D, 5M with greater than 50 percent canopy cover; b. Trees in the dominant and co-dominant crown classes averaging 24 inches DBH or greater, c. Large and/or tall trees (greater than 150 feet tall) and some very large trees. d. High or moderately high canopy cover with areas greater than 70 percent, including hardwoods; e. Two or more tree canopy layers; and

¹⁷ Adapted from the CSO Strategy Habitat Suitability and Quality (p. 22-23) and Approach 1: PACs 1.C and 4.C (p. 26 and 28, respectively).

Term	Identification	Definition
		f. Contains some very large snags and snags and down woody material levels on the high end of the range appropriate for the forest type. <i>Operationally, using CWHR classes 6, 5D, and 5M when designing projects is acceptable.</i>
Best Available Nesting, Roosting, and Foraging Habitat	BANRF habitat	BANRF¹⁸ habitat is important for CSO for foraging and may provide conditions that support current spotted owl reproduction in the absence of preferable HQNR. BANRF habitat include the following: a. Forests within CWHR classes of 5M, 4D, or 4M with very large remnant trees; b. Trees in the dominant and co-dominant crown classes ideally average 20 inches QMD or greater and including some large trees; c. High or moderately high canopy cover, including hardwoods, or moderate canopy cover in trees greater than 20 inches DBH where higher canopy cover is not available; BANRF habitat should be selected based on areas that may also include: d. Two or more tree canopy layers; and e. Contains some very large snags and medium to large snags and down woody materials levels as on the moderate to high end of the range appropriate for the forest type. <i>Operationally, using stands with CWHR classes 4D and 4M when designing projects is acceptable.</i>
Suitable habitat	<i>No special designation</i>	Suitable habitat for CSO includes both HQNR and BANRF habitat. Stands outside of these designations are classified as unsuitable.

¹⁸ Adapted from the CSO Strategy Habitat Suitability and Quality (p. 22) and Approach 1: PACs 1.C and 4.C (p. 26 and 28, respectively).

Term	Identification	Definition
		<i>Operationally, this includes CWHR classes 6, 5D, 5M, 4D, and 4M.</i>
Maintain habitat	<u>maintain</u>	Maintaining a habitat type will keep its habitat classification in HQNR and BANRF. Treatments may still occur, but they cannot result with the stand downgrading to a lower habitat type or being removed from suitable habitat (i.e. HQNR → HQNR, BANRF → BANRF). <i>Operationally for HQNR, CWHR classes 6, 5D, and 5M → 6, 5D, and 5M.</i> <i>Operationally for BANRF, CWHR classes 4D and 4M → 4D and 4M</i>
Improve habitat	<u>improve</u>	Improving a habitat occurs when treatments improve the habitat quality via thinning or removal of smaller trees that increase overall QMD. HQNR can be improved within the HQNR classification. BANRF → HQNR. <i>Operationally for BANRF, CWHR classes 4D and 4M → 5D and 5M.</i>
Downgrade habitat	<i>Not used in components</i>	Downgrading occurs when altering a habitat so that it no longer functions in the same way pre-treatment but still serves as suitable habitat for CSO. Characterized by HQNR → BANRF. BANRF cannot be downgraded, reduction of quality results in habitat removal. <i>Operationally for HQNR, this occurs when CWHR classes 6, 5D, or 5M → 4D or 4M.</i> <i>Operationally for BANRF, this occurs when CWHR classes 4D or 4M → unsuitable habitat</i>
Remove habitat	<i>Not used in components</i>	Habitat removal occurs when suitable habitat loses its functionality for CSO nesting, roosting, foraging, or dispersal habitat post activity.

Term	Identification	Definition
		<i>Operationally, HQNR or BANRF → unsuitable habitat.</i>
Retain	<i>No special designation</i>	Retain is used in these components to keep the described element during treatments. Often this explicitly means to keep certain features (snags, clumps, large trees, corridors, etc.), but it can also be used to specify the extent, or area, of habitat that is to be kept. In these instances, treatments can still occur as long as the extent of acreage is not reduced beyond the specified threshold.
Occupancy status	<i>No special designation</i>	Occupancy and historical occupancy status shall be assessed as defined in the 2019 Conservation Strategy for the California Spotted Owl in the Sierra Nevada, or more current guidance provided by the Pacific Southwest region.
Unknown occupancy	<i>No special designation</i>	Nesting and roosting habitat of unknown occupancy is a contiguous patch of at least 300 acres of HQNR or BANRF habitat not overlapping with known territories and not surveyed during the prior three years.

Project-Specific Forest Plan Amendments

The project-specific Forest Plan amendment language identified below entirely replaces the corresponding existing Forest Plan Direction component as noted.

B-2: North Fork Forest Recovery Project Project-Specific Forest Plan Amendment

Amendment ID	Component Type	Existing Forest Plan Direction	Project-Specific Plan Amendment	Applies
STD-NFFRP-01	Standard & Guideline	S&G 7. Mechanical Thinning Treatments: For mechanical thinning treatments in mature forest habitat (CWHR types 4M, 4D, 5M, 5D, and 6) outside WUI defense zones:	For mechanical thinning treatments in mature forest habitat (CWHR types 4M, 4D, 5M, 5D, and 6) outside WUI defense zones and outside northern goshawk PACs or California spotted owl PACs:	Mechanical thinning treatments outside PACs.

Amendment ID	Component Type	Existing Forest Plan Direction	Project-Specific Plan Amendment	Applies
		• Design projects to retain at least 40 percent of the existing basal area. The retained basal area should generally be comprised of the largest trees. • Where available, design projects to retain 5 percent or more of the total treatment area in lower layers composed of trees 6 to 24 inches DBH within the treatment unit. • Design projects to avoid reducing pre-existing canopy cover by more than 30 percent within the treatment unit. Percent is measured in absolute terms (for example, canopy cover at 80 percent should not be reduced below 50 percent.) • Within treatment units, at a minimum, the intent is to provide for an effective fuels treatment. Where existing vegetative conditions are at or near 40 percent canopy cover, projects are to be designed remove the material necessary to meet fire and fuels objectives. (SNFPA ROD p. 50)	• Design projects to a relative stand density index (rSDI) of 25 to 35 percent of maximum. • Where available, design projects to retain 5 percent or more of the total treatment area in lower layers composed of trees 6 to 24 inches DBH within the treatment unit.	<i>See STD-PAC01 for Project-Specific Forest Plan Amendment of S&G 7 that applies within California spotted owl protected activity centers.</i> <i>See STD-TERR-1B for Project-Specific Forest Plan Amendment of S&G 7 that applies within California spotted owl territories.</i>

B-3: Regional CSO Project-Specific Forest Plan Amendments

Amendment ID	Component Type	Existing Forest Plan Direction	Project-Specific Plan Amendment	Applies
DES-PAC-01	Land Allocation	California Spotted Owl Protected Activity Center (PACs) Designation. California spotted owl protected activity centers (PACs) are delineated surrounding each territorial owl activity center detected on National Forest System lands since 1986. Owl activity centers are designated for all territorial owls based on: (1) the most recent documented nest site, (2) the most recent known roost site when a nest location remains unknown, and (3) a central point based on repeated daytime detections when neither nest or roost locations are known. PACs are delineated to: (1) include known and suspected nest stands and (2) encompass the best available 300 acres of habitat in as compact a unit as possible. The best available habitat is selected for California spotted owl PACs to include: (1) two or more tree canopy layers; (2) trees in the dominant and co-dominant crown classes averaging 24 inches DBH or greater; (3) at least 70 percent tree canopy cover (including hardwoods); and (4) in descending order of priority, CWHR classes 6, 5D, 5M, 4D, and 4M and other stands with at least 50 percent canopy cover (including hardwoods). Aerial photography interpretation and field verification are used as needed to delineate PACs. (SNFPA ROD p. 37)	California Spotted Owl Protected Activity Center (PACs) Designation. California spotted owl protected activity centers (PACs) are defined by the following characteristics: • National Forest System lands surrounding territorial owls based on a documented nest site; recent roost site if nest location is unknown; or central point of repeated daytime detections when neither nest nor roost locations are known. • 300 acres of nesting and roosting habitat in as compact a unit as possible, including all the elements (a through f) defined under HQNR habitat or, if HQNR is scarce, areas including at least the elements a through c listed under BANRF habitat. • Includes sites that provide the most sustainable nesting and roosting habitat that currently meets near-term habitat needs to support reproductive success and can be resilient to natural disturbances and climate change. PACs may be delineated using a variety of tools including field verification, aerial photography interpretation or other remotely sensed data as needed.	PACs
MGT-PAC-01	Management Strategy	Direction for locating area treatments is included in the standards and guidelines in Part D of this appendix. Treatment patterns are to be	Direction for locating area treatments is included in the standards and guidelines in Part D of this appendix. Treatment patterns are to be developed	PACs

Amendment ID	Component Type	Existing Forest Plan Direction	Project-Specific Plan Amendment	Applies
		developed using a collaborative, multi-stakeholder approach. Resource considerations factored into the strategic placement of fuels treatments include objectives for locating treatments to overlap areas of condition class 2 and 3, high density stands, and pockets of insect and disease. Treatment areas are located to avoid PACs to the greatest extent possible. (SNFPA ROD p. 35)	using a collaborative, multi-stakeholder approach. Resource considerations factored into the strategic placement of fuels treatments include objectives for locating treatments to overlap areas of condition class 2 and 3, high density stands, and pockets of insect and disease. Treatment areas should only overlap PACs to the extent necessary to reduce the threat of habitat loss due to wildfire. Treatments shall avoid reducing habitat quality in the HQNR habitat within PACs.	
GDL-PAC-01	Standard & Guideline	S&G 1. Strategic placement of fuels treatments should also consider objectives for locating treatment areas to overlap with areas of condition class 2 and 3, high density stands, and pockets of insect and disease. Avoid PACs to the greatest extent possible when locating area treatments. Incorporate areas that already contribute to wildfire behavior modification, including timber sales, burned areas, bodies of water, and barren ground, into the landscape treatment area pattern. Identify gaps in the landscape pattern where fire could spread at some undesired rate or direction and use treatments (including maintenance treatments and new fuels treatments) to fill identified gaps. (SNFPA ROD p. 49)	S&G 1. Strategic placement of fuels treatments should also consider objectives for locating treatment areas to overlap with areas of condition class 2 and 3, high density stands, and pockets of insect and disease. Treatment areas should only overlap PACs to the extent necessary to reduce the threat of habitat loss due to wildfire. Treatments shall avoid reducing habitat quality in the HQNR habitat within PACs. Incorporate areas that already contribute to wildfire behavior modification, including timber sales, burned areas, bodies of water, and barren ground, into the landscape treatment area pattern. Identify gaps in the landscape pattern where fire could spread at some undesired rate or direction and use treatments (including maintenance treatments and new fuels treatments) to fill identified gaps.	PACs
STD-PAC-01	Standard & Guideline	S&G 7. For mechanical thinning treatments in mature forest habitat (CWHR types 4M, 4D, 5M, 5D, and 6) outside WUI defense zones:	In California spotted owl PACs, all management activities must <u>maintain</u> or <u>improve</u> habitat quality in HQNR habitat by:	PACs

Amendment ID	Component Type	Existing Forest Plan Direction	Project-Specific Plan Amendment	Applies
		• Within California spotted owl PACs, where treatment is necessary, remove only material needed to meet project fuels objectives. Focus on removal of surface and ladder fuels. S&G 72. Mechanical treatments may be conducted to meet fuels objectives in protected activity centers (PACs) located in WUI defense zones. In PACs located in WUI threat zones, mechanical treatments are allowed where prescribed fire is not feasible and where avoiding PACs would significantly compromise the overall effectiveness of the landscape fire and fuels strategy. Mechanical treatments should be designed to maintain habitat structure and function of the PAC. S&G 73. While mechanical treatments may be conducted in protected activity centers (PACs) located in WUI defense zones and, in some cases, threat zones, they are prohibited within a 500-foot radius buffer around a spotted owl activity center within the designated PAC. Prescribed burning is allowed within the 500-foot radius buffer. Hand treatments, including handline construction, tree pruning, and cutting of small trees (less than 6 inches DBH), may be conducted prior to burning as needed to protect important elements of owl habitat. Treatments in the remainder of the PAC use the forest-wide standards and guidelines for mechanical thinning. S&G 74. In PACs located outside the WUI, limit stand-altering activities to reducing surface and ladder fuels through prescribed fire treatments.	1. Maintaining or improving existing CWHR class (do not reduce 5D to 5M); 2. Retaining clumps of the largest available trees greater than 24 inches DBH; and 3. Retaining at least two canopy layers at the stand/patch scale in areas where large trees occur. Where necessary to increase long-term resilience, vegetation treatments that may reduce near-term habitat quality may be authorized in up to 100 acres of a PAC outside of HQNR habitat. Throughout PACs all vegetation treatments must: • Retain the largest/oldest trees, known nest trees, and other large trees and snags with cavities, deformities, broken tops, or other habitat features of value to old forest species; • Retain connected areas of moderate (at least 40 percent) and high (at least 60 percent) canopy cover between the known nest site (if nest site is not known, use the most recent known roost site) and areas in the rest of the PAC; • Avoid mechanical treatments within a 10-acre area surrounding the most recent known nest; • Avoid creating new landings, new temporary roads, or canopy gaps larger than 0.25 acres comprising no more than 5 acres in total; • Increase the QMD of trees at the PAC scale; and • Maintain the average canopy cover of the PAC above 50 percent.	

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		In forested stands with overstory trees 11 inches DBH and greater, design prescribed fire treatments to have an average flame length of 4 feet or less. Hand treatments, including handline construction, tree pruning, and cutting of small trees (less than 6 inches DBH), may be conducted prior to burning as needed to protect important elements of owl habitat. (SNFPA ROD pp. 50-51, 60)	Prescribed burning is allowed within the 10 acres surrounding a nest tree or structure. Pre-treatment in preparation of prescribed burning may be conducted prior to burning, as needed, including handline construction, tree pruning, and cutting of small trees (less than 8 inches DBH). Exceptions: • This standard may be modified as specified in WUI defense zones or when constructing a fuelbreak where avoiding overlap with a PAC is not feasible. To limit fragmentation and maintain connectivity of HQNR and BANRF habitat, construction of fuelbreaks should avoid intersecting with California spotted owl PACs. Treatments in WUI defense zones and creation of a fuelbreaks must: - o Avoid the 10 acres surrounding the most recent known nest site; - o Avoid existing HQNR habitat; and - o Maintain at least 40 percent overstory canopy cover and 10 percent understory cover in shaded fuelbreaks, whenever fuels and fire behavior objectives can be met with this level of vegetation retention.	
GDL-PAC-PB	Standard & Guideline	S&G 74. In PACs located outside the WUI, limit stand-altering activities to reducing surface and ladder fuels through prescribed fire treatments. In forested stands with overstory trees 11 inches DBH and greater, design prescribed fire	To restore forest vegetation within California spotted owl PAC, when practical based on existing conditions, use prescribed fire, alone or in combination with mechanical thinning.	PACs

Amendment ID	Component Type	Existing Forest Plan Direction	Project-Specific Plan Amendment	Applies
		treatments to have an average flame length of 4 feet or less. Hand treatments, including handline construction, tree pruning, and cutting of small trees (less than 6 inches DBH), may be conducted prior to burning as needed to protect important elements of owl habitat. (SNFPA ROD p. 60)	To minimize loss or damage to known nest and roost trees, include mitigation measures when conducting prescribed fire in PACs. To minimize impacts to overstory canopy and provide conditions for continued use for nesting and roosting within PACs, reduce fuel loads with thinning and/or prescribed burning to minimize the risk of high-severity fire and promote conditions that lead to lower intensity predicted fire effects (generally flame lengths averaging 4 to 6 feet).	
STD-PAC-02	Standard & Guideline	S&G 33. Conduct surveys in compliance with the Pacific Southwest Region's survey protocols during the planning process when proposed vegetation treatments are likely to reduce habitat quality in suitable California spotted owl habitat with unknown occupancy. Designate California spotted owl protected activity centers (PACs) where appropriate based on survey results. (SNFPA ROD p. 54)	S&G 33. Before authorizing and before implementing mechanical vegetation treatments within existing PACs or vegetation treatments in CSO nesting and roosting habitat of unknown occupancy, forests must follow current guidance for the Pacific Southwest region to: • Determine occupancy status; • Identify owl nest sites (where nest location is not known, the most recent daytime roost); and • Delineate new or modify existing PACs and territories, as necessary, within the project area.	PACs
DES-TERR-01	Management Strategy	A network of land allocations, including California spotted owl and northern goshawk protected activity centers (PACs), California spotted owl home range core areas, forest carnivore den sites, and the southern Sierra fisher conservation area, with management direction [...] (SNFPA ROD p. 31)	A network of land allocations, including California spotted owl and northern goshawk protected activity centers (PACs), California spotted owl territories, forest carnivore den sites, and the southern Sierra fisher conservation area, with management direction [...]	Territories

Amendment ID	Component Type	Existing Forest Plan Direction	Project-Specific Plan Amendment	Applies
DES-TERR-02	Land Allocation	California Spotted Owl Home Range Core Areas (HRCAs) Designation. A home range core area is established surrounding each territorial spotted owl activity center detected after 1986. The core area amounts to 20 percent of the area described by the sum of the average breeding pair home range plus one standard error. Home range core area sizes are as follows: 2,400 acres on the Hat Creek and Eagle Lake Ranger Districts of the Lassen National Forest, 1,000 acres on the Modoc, Inyo, Humboldt-Toiyabe, Plumas, Tahoe, Eldorado, Lake Tahoe Basin Management Unit and Stanislaus National Forests and on the Almanor Ranger District of Lassen National Forest, and 600 acres of the Sequoia and Sierra National Forests. Aerial photography is used to delineate the core area. Acreage for the entire core area is identified on national forest lands. Core areas encompass the best available California spotted owl habitat in the closest proximity to the owl activity center. The best available contiguous habitat is selected to incorporate, in descending order of priority, CWHR classes 6, 5D, 5M, 4D and 4M and other stands with at least 50 percent tree canopy cover (including hardwoods). The acreage in the 300-acre PAC counts toward the total home range core area. Core areas are delineated within 1.5 miles of the activity center. When activities are planned adjacent to non-national forest lands, circular core areas are delineated around California spotted owl	California Spotted Owl Territories Designation. Territories are defined by the following characteristics: A 1,000-acre circle, which includes the 300-acre PAC, surrounding territorial owls, centered on a documented nest site or roost site if nest location is unknown or central point of repeated daytime detections when neither nest nor roost locations are known. • Territory boundaries should include the entire PAC and be adjusted to include suitable habitat in the most sustainable areas (moist vegetation types and site conditions, often in drainages or on north-facing slopes) and to exclude unsuitable habitat. • Contains diverse structural and seral conditions to facilitate nesting, roosting, and foraging. • May overlap adjacent territories. • Territories are established and retired together with PACs. When activities are planned adjacent to non-national forest lands containing known CSO nest stands, a 1,000-acre circle territory should be delineated around known CSO activity centers on non-national forest lands. Any part of the circular core area that lies on national forest lands is designated and managed as a CSO territory.	Territories

Amendment ID	Component Type	Existing Forest Plan Direction	Project-Specific Plan Amendment	Applies
		activity centers on non-national forest lands. Using the best available habitat as described above, any part of the circular core area that lies on national forest lands is designated and managed as a California spotted owl home range core area. (SNFPA ROD p. 39)		
DC-TERR-1B	Desired Condition	California Spotted Owl Home Range Core Areas (HRCAs) Desired Conditions. HRCAs consist of large habitat blocks that have: (1) at least two tree canopy layers; (2) at least 24 inches DBH in dominant and co-dominant trees; (3) a number of very large (greater than 45 inches DBH) old trees; (4) at least 50 to 70 percent canopy cover; and (5) higher than average levels of snags and down woody material. (SNFPA ROD p. 40, repeated on p. 46) California Spotted Owl Home Range Core Areas (HRCAs) Management Intent. Treat fuels using a landscape approach for strategically placing area treatments to modify fire behavior. Retain existing suitable habitat, recognizing that habitat within treated areas may be modified to meet fuels objectives. Accelerate development of currently unsuitable habitat (in non-habitat inclusions, such as plantations) into suitable condition. Arrange treatment patterns and design treatment prescriptions to avoid the highest quality habitat (CWHR types 5M, 5D, and 6) wherever possible.	California Spotted Owl Territories Desired Conditions At least 50 to 60 percent (depending on the terrestrial vegetation type and site conditions) of each California spotted owl territory, including the PAC, consists of HQNR habitat in large enough patches to provide interior stand conditions (generally 1 to 2 tree heights from an edge) surrounded by BANRF, preferably with a greater proportion of HQNR to BANRF, particularly closer to the nest. The remainder of the territory consists of a diversity of many different structure and canopy classes. For areas where multiple territories comprise over 75 percent of a watershed (typically a HUC 12 unit and greater than 10,000 acres in size) at least 30-50 percent of the watershed consists of the HQNR and BANRF habitat and the remainder of the territory consists of a diversity of many different structure and canopy classes.	Territories

Amendment ID	Component Type	Existing Forest Plan Direction	Project-Specific Plan Amendment	Applies
		California Spotted Owl Home Range Core Areas (HRCAs) Management Objectives. Establish and maintain a pattern of fuels treatments that is effective in modifying wildfire behavior. Design treatments in HRCAs to be economically efficient and to promote forest health where consistent with habitat objectives. (SNFPA ROD p. 46)		
STD-TERR-1B	Standard & Guideline	S&G 7. For mechanical thinning treatments in mature forest habitat (CWHR types 4M, 4D, 5M, 5D, and 6) outside WUI defense zones: • Design projects to retain at least 40 percent of the existing basal area. The retained basal area should generally be comprised of the largest trees. • Where available, design projects to retain 5 percent or more of the total treatment area in lower layers composed of trees 6 to 24 inches DBH within the treatment unit. • Design projects to avoid reducing pre-existing canopy cover by more than 30 percent within the treatment unit. Percent is measured in absolute terms (for example, canopy cover at 80 percent should not be reduced below 50 percent.) • Within treatment units, at a minimum, the intent is to provide for an effective fuels treatment. Where existing vegetative conditions are at or near 40 percent canopy cover, projects	1. In California spotted owl territories that do not currently meet the territory desired condition (DC-TERR-01B), <u>maintain or improve</u> all HQNR and BANRF habitat wherever it exists throughout the territory. 2. If DC-TERR-01 has been met, a. When a territory consists of a majority of moist habitat types and contains 60 percent or more HQNR and BANRF habitat, retain at least 60% suitable habitat. Treatments will promote heterogenous structure across the territory and prioritize <u>maintaining or improving HQNR</u> habitat in drainages and north- or east-facing slopes. b. When a territory consists of a majority of moist habitat types and contains less than 60 percent HQNR and BANRF habitat, <u>maintain or improve</u> all HQNR and BANRF habitat wherever it exists throughout the territory. Treatments will promote heterogenous structure across the territory. c. When a territory consists of a majority of dry habitat types and contains 60% or more HQNR	

Amendment ID	Component Type	Existing Forest Plan Direction	Project-Specific Plan Amendment	Applies
		are to be designed remove the material necessary to meet fire and fuels objectives. • Within California spotted owl Home Range Core Areas: Where existing vegetative conditions permit, design projects to retain at least 50 percent canopy cover averaged within the treatment unit. Exceptions are allowed in limited situations where additional trees must be removed to adequately reduce ladder fuels, provide sufficient spacing for equipment operations, or minimize re-entry. Where 50 percent canopy cover retention cannot be met for reasons described above, retain at least 40 percent canopy cover averaged within the treatment unit. • Outside of California spotted owl Home Range Core Areas: Where existing vegetative conditions permit, design projects to retain at least 50 percent canopy cover within the treatment unit. Exceptions are allowed where project objectives require additional canopy modification (such as the need to adequately reduce ladder fuels, provide for safe and efficient equipment operations, minimize re-entry, design cost efficient treatments, and/or significantly reduce stand density.) Where canopy cover must be reduced below 50 percent, retain at least 40 percent canopy cover averaged within the treatment unit. (SNFPA ROD p. 50-51)	and BANRF habitat, retain at least 50% suitable habitat. Treatments will promote heterogenous structure across the territory and prioritize <u>maintaining or improving HQNR</u> habitat in drainages and north- or east-facing slopes. d. When a territory consists of a majority of dry habitat types and contains less than 60 percent HQNR and BANRF habitat, <u>maintain or improve</u> all HQNR habitat wherever it exists throughout the territory, and retain at least 50 percent of suitable habitat. Treatments will promote heterogenous structure across the territory. Exception: • For territories occurring in WUI defense zones, within high risk fireshed areas, or in territories that contain unavoidable placement of fuelbreaks, retain at least 40 percent of the territory (including the PAC) in suitable habitat. Treatments will promote heterogenous structure across the territory and prioritize <u>maintaining or improving HQNR</u> habitat in drainages and north- or east-facing slopes.	
STD-TERR-02	Standard & Guideline	[None]	When mechanical treatments create canopy gaps within California spotted owl territories, but outside of PACs, individual openings shall not	Territories

Amendment ID	Component Type	Existing Forest Plan Direction	Project-Specific Plan Amendment	Applies
			exceed 1.25 acres (and should generally not exceed 0.5 acre) and shall not comprise more than 30 percent of the total area in the territory. This includes openings created for the construction of landings or temporary roads (restricted to 1.0 mile or less).	
GDL-TERR-01	Standard & Guideline	[None]	To promote high-quality nesting and denning habitat for old-forest-associated species, thinning in CSO territories to increase heterogeneity and resilience should retain the oldest and largest trees and large trees with habitat features (such as deformities, broken tops, large branches, and cavities) that benefit these wildlife species. Desired conditions for large tree density vary by vegetation type and site conditions.	Territories
GDL-TERR-02	Standard & Guideline	[None]	To facilitate development of future nest sites, vegetation treatments in California spotted owl territories should: • Promote growth of trees greater than 24 inches DBH and especially large trees, and • Retain clumps or groups of trees greater than 24 inches DBH and/or 100 feet tall, and especially trees greater than 30 inches DBH and/or 150 feet tall, with canopy cover greater than 60 to 70 percent.	Territories
STD-PROJ-1B	Standard & Guideline	S&G 6. For all mechanical thinning treatments, design projects to retain all live conifers 30 inches DBH or larger. Exceptions are allowed to meet needs for equipment operability. (SNFPA ROD p. 50)	S&G 6. For all treatments, design projects to retain live conifer trees greater than 30 inches DBH except in the case of imminent threat to life and property, or if one of the conditions below is met:	Entire project area

Amendment ID	Component Type	Existing Forest Plan Direction	Project-Specific Plan Amendment	Applies
			a) When required for equipment operability, individual trees less than 35 inches DBH may be removed on an incidental basis. b) Outside of California spotted owl territories and where necessary to move towards vegetation desired conditions, live trees greater than 30 inches but less than 40 inches DBH may be felled to create coarse woody debris (where it's lacking), or removed, under the following limited circumstances: • When removing trees is needed for aspen, oak, or meadow restoration treatments or for cultural or Tribal importance. • In overly-dense stands to favor retention or promote the growth of even larger or older shade-intolerant trees. • To improve the growth and vigor of rust-resistant sugar pine trees greater than 16 inches DBH by reducing competition from surrounding trees; or • Within homogeneous plantations, to reduce loss of large trees due to competition in overly dense stands	
STD-PROJ-02	Standard & Guideline	[None]	Known nest, roost, rest, or den trees used by at-risk species, including surrounding trees that provide beneficial thermal or predatory protection, must not be purposefully removed, except for the reasonably unavoidable removal of hazard trees and as required to meet other State or Federal regulatory requirements.	Entire project area
GDL-PROJ-01	Standard & Guideline	[None]	To promote habitat connectivity at the watershed scale, when conducting vegetation treatments in	Entire project area

Amendment ID	Component Type	Existing Forest Plan Direction	Project-Specific Plan Amendment	Applies
			California spotted owl territories, retain connected areas of moderate and high canopy cover in large /tall trees.	
GDL-PROJ-02	Standard & Guideline	[None]	To provide for continued availability of patches of nesting, roosting, and foraging habitat (6, 5D, 5M, and 4D in descending order of priority), in ecologically sustainable areas, consider aspect and position on slope as follows: • On north and east facing slopes, drainages, swales and canyon bottoms – when conducting treatments to improve resilience – maintain patches of large/tall trees with moderate and high canopy cover large enough to provide beneficial thermal or predatory protection, amongst more heterogenous conditions. To facilitate movement, retain connectivity between patches when possible. • On south- and west-facing slopes and on ridges, prioritize restoration toward forest conditions resistant to stressors.	Entire project area
GDL-PROJ-03	Standard & Guideline	S&G 27. Minimize old forest habitat fragmentation. Assess potential impacts of fragmentation on old forest associated species (particularly fisher and marten) in biological evaluations. S&G 28. Assess the potential impact of projects on the connectivity of habitat for old forest associated species. S&G 29. Consider retaining forested linkages (with canopy cover greater than 40 percent) that	To promote connectivity of old-forest habitat by prioritizing restoration-focused treatments in areas between isolated old-forest patches, avoid creating large areas of open canopy habitat (vegetation cover less than 30 percent) that would isolate patches of old, dense forest and limit wildlife movement.	Entire project area

Amendment ID	Component Type	Existing Forest Plan Direction	Project-Specific Plan Amendment	Applies
		are interconnected via riparian areas and ridgetop saddles during project-level analysis. S&G 30. If fishers are detected outside the southern Sierra fisher conservation area, evaluate habitat conditions and implement appropriate mitigation measures to retain suitable habitat within the estimated home range. Institute project-level surveys over the appropriate area, as determined by an interdisciplinary team. S&G 31. Identify areas for acquisition, exchange, or conservation easements to enhance connectivity of habitat for old forest associated species. (SNFPA ROD p. 50-51)		

Substantive Requirements

B- 4: Consistency with the Substantive Requirements for a Forest Plan Amendment

Directly Related Substantive Requirement	Purpose of the Substantive Requirement	How the Amended Plan Meets the Substantive Requirement's Purpose	Project Consistency with the Substantive Requirement's Purpose
36 CFR 219.8 Sustainability 36 CFR 219.8 requires forest plans to provide for social, economic, and ecological sustainability with Forest Service authority and consistent with the inherent capability of the plan area. 36 CFR 219.8 (a) Ecological sustainability (1) Ecosystem integrity	The overarching purpose of 36 CFR 219.8(a)(1) is to provide for ecological sustainability through maintaining and restoring ecosystem integrity in the plan area. Forest plans must include plan components, including standards or guidelines, to maintain or restore the ecological integrity of terrestrial and aquatic ecosystems and watersheds, including plan components to maintain or restore ecosystem structure, function, composition, and connectivity. Ecological sustainability refers to the capability of ecosystems to maintain ecological integrity (36 CFR 219.19). Ecological integrity is the quality or condition of an ecosystem when its dominant ecological characteristics (for example, composition, structure, function, connectivity and species composition and diversity) occur within the natural range of variation and can withstand and recover from most perturbations imposed by natural environmental dynamics or human influence (36 CFR 219.19).	Ecological sustainability requires a persistent, present, functioning ecosystem. Under current forest conditions, both ecological sustainability and integrity are compromised because, compared to historic conditions, the existing forested landscape is unnaturally dense with substantially higher numbers of less fire-resistant small-to medium-sized trees and there is excessive accumulations of surface and understory ladder fuels. Forests are in an overly stressed condition due to drought, increasing temperatures, and over a century of fire exclusion. Together, these existing conditions greatly reduce the forested landscape's ability to resist or recover from severe disturbances. Competition for limited resources in stressed, overly dense forest stands increase the landscape's vulnerability to extensive insect and disease infestations, drought, and the persistent and growing threat and occurrence of large-scale, high severity megafires (USDA FS 2019, pp. 17-19). These project-specific Forest Plan amendments are integrated with existing Forest Plan direction to encourage and support maintaining ecological sustainability in the North Fork Forest Recovery Project area. The amended Forest Plan meets the purpose of maintaining and restoring ecological integrity because it contains plan components, including	The ecological sustainability of forest ecosystems in the project is highly compromised. Much of the North Fork Forest Recovery Project area burned at high severity during the 2021 Dixie Fire. In remaining green forest stands, beneficial low-to-moderate severity fire has been largely absent in this landscape for more than a century. As a result of decades of fire exclusion, past harvest activities, and current management direction, the landscape's forest structure and composition have been substantially altered from historic conditions. Forests in this landscape were historically less dense and characterized by high levels of variability in stand structures (structural heterogeneity), greater numbers of larger shade-intolerant, fire-resistant trees, and less continuous tree canopy cover with more forest gaps and openings. Stands under these historic conditions were substantially more resilient to severe impacts from disturbances compared to the highly altered forests that exist in this landscape today. Remaining green forest stands in the project area are overly dense with greater numbers of small-and medium-sized trees, generally have continuous tree canopy cover, are dominated by less fire resilient shade tolerant conifers, and contain significant ladder fuels and diseased trees. Forests in this condition are

Directly Related Substantive Requirement	Purpose of the Substantive Requirement	How the Amended Plan Meets the Substantive Requirement's Purpose	Project Consistency with the Substantive Requirement's Purpose
		desired conditions, standards, guidelines, and potential management approaches, aimed at restoring resilient forest conditions. These plan components are guided by scientific literature analyzing and addressing historic forest conditions that developed under active fire regimes and anticipated changes in climate. The amended Forest Plan allows the North Fork Forest Recovery Project to develop forest stands that are more resilient to severe disturbances from wildfire, drought, insects, and diseases, thereby providing for ecological sustainability and ecosystem integrity.	highly susceptible to severe and widespread impacts from wildfire, drought, and insect and disease infestation. Another large, high-severity wildfire or drought in the project area would cause significant damage to any last remaining green forest stands. These project-specific Forest Plan amendments are integral to accomplishing the project's objectives. The Proposed Action, which includes these project-specific Forest Plan amendments, meets the purpose and need compared to the No Action Alternative.
36 CFR 219.9 Diversity of Plant and Animal Communities 36 CFR 219.9 adopts a complementary ecosystem (coarse filter) and species-specific (fine filter) approach to maintaining the diversity of plant and animal communities and the persistence of native species within the plan area 36 CFR 219.9 (a) Ecosystem plan components (1) Ecosystem integrity and (2) Ecosystem diversity	The overarching purpose of 36 CFR 219.9(a) is to provide the ecological conditions to maintain the diversity of plant and animal communities and support the persistence of most native species in the plan area. Requirements for plan components under 36 CFR 219.9(a)(1) mirror those for 36 CFR 219.8(a)(1) addressed in the preceding section. Under 36 CFR 219.9(a)(2), forest plans must include plan components, including standards or guidelines, to maintain or restore the diversity of ecosystems and habitat types throughout the plan area. In doing so, the plan must include plan components to maintain or restore: (i) key characteristics associated with terrestrial and aquatic ecosystem types; (ii) rare aquatic and terrestrial plant and animal communities; and (iii) the diversity of native tree species similar to those existing in the plan area.	Since Euro-American settlement, grazing, logging, mining, and fire exclusion have interacted to greatly alter the historical fire regime and vegetation patterns in Sierra Nevada forests, including forests across the Plumas National Forest (Knapp et al. 2013; Stephens et al. 2015). The current landscape is now dominated by fuel-rich, early-to mid-seral stage, overstocked forests comprised disproportionately of less fire-tolerant species (Hessburg et al. 2005; Knapp et al. 2013; Stephens et al. 2015; Storer and Usinger 1963). Given the uncharacteristically high canopy cover, tree density, and continuity of abundant surface fuels, the landscape has become less resilient to disturbance events and agents and is especially susceptible to extensive and uncharacteristically severe fires (Beaty and Taylor 2007; Hessburg et al. 2005). The amended plan maintains the diversity of plant and animal communities and	The absence of frequent, low- to moderate-severity fires in the project area has resulted in the homogenization and development of overly dense stands with an overabundance of shade-tolerant, less fire-resistant trees and led to excessive accumulations of surface, ladder, and canopy fuels. The shift in tree species composition, coupled with uncharacteristically dense forests and heavy accumulation of surface and ladder fuels has reduced ecosystem diversity and resilience of the landscape, thereby compromising ecosystem integrity. Lack of structural and species diversity creates conditions that are highly susceptible to large, high-severity fire as well as large-scale mortality due to insect or disease outbreaks or drought conditions. The North Fork Forest Recovery Project was developed with the recognition that maintaining the diversity of plant and animal communities and the persistence of

Directly Related Substantive Requirement	Purpose of the Substantive Requirement	How the Amended Plan Meets the Substantive Requirement's Purpose	Project Consistency with the Substantive Requirement's Purpose
		supports the persistence of native species in the project area through plan components designed to enhance ecosystem integrity and ecosystem diversity. The amended plan, meets the substantive requirement's purpose by directing, guiding, and, in some cases, limiting active management to: (i) establish, favor retention, and/or promote growth of larger or older shade-intolerant trees in overly dense stands to more effectively meet project objectives for tree species composition and forest stand density; (ii) promote heterogeneity by allowing; opening creation; and (iii) reduce loss of large diameter trees due to competition in overly dense stands. (USDA FS 2019)	native species in the plan area is dependent on a resilient landscape comprised of diverse, heterogenous forests more closely aligned with historic conditions that developed under an active fire regime. Historically, lower stand densities and fuel loading, more clumps, gaps, and openings, and greater numbers of large and very large fire-resistant tree species all contributed to a resilient forest that supported a diverse plant and animal community. The Proposed Action will create conditions more closely aligned with an active fire regime by reducing fuel loading, retaining the largest, healthiest trees, and increasing stand structural heterogeneity.
36 CFR 219.9(b) Additional species-specific plan components	The overarching purpose of 36 CFR 219.9(b) is to provide for additional ecological conditions for individual species not otherwise provided under 36 CFR 219.9(a) above. The responsible official must determine whether or not the plan components required by 36 CFR 219.9(a) provide the ecological conditions necessary to: contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern within the plan area. If the responsible official determines that the plan components required in 36 CFR 219.9(a) are insufficient to provide such ecological conditions, then additional, species- specific plan components, including standards or guidelines, must be	The proposed project-specific Forest Plan amendment is based on recommendations in the Conservation Strategy for the California Spotted Owl in the Sierra Nevada (USDA FS 2019). The strategy was developed to achieve three main goals for the California spotted owl across the species' range: (1) promote and maintain well-distributed owl habitat by developing key habitat elements and connectivity; (2) promote California spotted owl persistence by enhancing habitat resilience to multiple disturbances, considering climate change; and (3) maintain a well-distributed and stable California spotted owl population by minimizing impacts from non-habitat threats. The strategy's approaches, which are designed to achieve desired conservation outcomes for the California spotted owl, guided development of the project-specific plan amendment.	The California spotted owl depends on large and structurally diverse trees and snags for nesting, roosting, and foraging. (USDA FS 2019). The North Fork Forest Recovery Project was developed to specifically maintain and promote these important habitat characteristics for the California spotted owl in remaining green forest stands. Consistent with the California Spotted Owl Strategy, more intensive treatments could occur outside of PACs and Territories. The California spotted owl and American goshawk effects analyses in the project record demonstrates the project's effectiveness at maintaining and improving highest quality California spotted owl and American goshawk habitat from two perspectives (1) how the proposed treatments would maintain existing highest quality habitat within PACs and Territories,

Directly Related Substantive Requirement	Purpose of the Substantive Requirement	How the Amended Plan Meets the Substantive Requirement's Purpose	Project Consistency with the Substantive Requirement's Purpose
	included in the plan to provide such ecological conditions in the plan area.	The amended Forest Plan includes a new approach that specifies the desired ecological conditions to best support the California spotted owl, while retaining standards and guidelines that constrain management actions within PACs and Territories. The plan amendment aims to maintain high quality habitat while protecting it from risk of loss from high-severity wildfire and other stressors.	and (2) how the proposed treatments lead to long-term maintenance of habitat as represented by a reduction in wildfire risk and resulting loss of habitat. These results further support the finding that the Proposed Action, including the project-specific Forest Plan amendment and unamended components in the existing Forest Plan, are consistent with the complementary ecosystem and species-specific approach to maintaining the diversity of plant and animal communities and the persistence of native species in the plan area.
36 CFR 219.10 Multiple Use While meeting the requirements of 36 CFR 219.8. Sustainability and 36 CFR 219.9 Diversity of Plant and Animal Communities (addressed in the sections above), 36 CFR 219.10 requires forest plans to provide for ecosystem services and multiple uses. 36 CFR 219.10(a) Integrated resource management for multiple use	The overarching purpose of substantive requirement 36 CFR 219.10(a) Integrated Resource Management for Multiple Use is to ensure that forest plans provide for ecosystem services and multiple uses, including outdoor recreation, range, timber, watershed, wildfire, and fish, within Forest Service authority and the inherent capability of the plan area. To do so, Section 219.10 (a) stipulates that forest plans must include plan components, including standards and guidelines, for integrated resource management to provide for ecosystem services and multiple uses in the plan area. This substantive requirement then lists ten items the responsible official must consider when developing the plan components for integrated resource management. Not every item listed- or aspects of each item listed - are directly related to the scope and scale of the proposed project-specific plan amendment. The directly related	Refer to below sections addressing individual requirements of 36 CFR 219.10(a)	Refer to below sections addressing individual requirements of 36 CFR 219.10(a)

Directly Related Substantive Requirement	Purpose of the Substantive Requirement	How the Amended Plan Meets the Substantive Requirement's Purpose	Project Consistency with the Substantive Requirement's Purpose
	considerations include aspects (emphasized in bold below) of items (1), (5), (7), and (8). The project- specific Forest Plan amendment recognizes the interdependence of ecological and societal resources and values.		
36 CFR 219.10 (a)(1)	36 CFR 219.10(a)(1) stipulates that when developing the plan components for integrated resource management, the responsible official shall consider to the extent relevant to the plan area and public participation and the requirements of 36 CFR 219.7, 219.8, 219.9, and 219.11: (1) aesthetic values, air quality, cultural and heritage resources, ecosystem services, fish and wildlife species, forage, geologic features, grazing and rangelands, habitat and habitat connectivity, recreation settings and opportunities, riparian areas, scenery, soil, surface and subsurface water quality, timber, trails, vegetation, viewsheds, wilderness, and other relevant resources and uses.	The California spotted owl and American (formerly “northern”) goshawk, both Forest Service sensitive wildlife species, and their critical habitat needs were directly considered in development of the proposed project-specific Forest Plan amendment as well as retention of existing Forest Plan management direction. Proposed changes include modifying, removing, and adding specific Forest Plan components to improve forest resilience in the areas surrounding California spotted owl PACs and Territories and American goshawk PACs. The project-specific Forest Plan amendment is integrated with existing retained Forest Plan direction to allow actions that will make the landscape more resilient while providing for critical habitat needs. The project-specific Forest Plan amendment, integrated with retained existing Forest Plan direction, supports effective use of timber harvest, other mechanical thinning of vegetation, fuel reduction activities and prescribed fire to reduce stand densities and ladder fuels to increase the resilience of forests to fire, drought, and other disturbances incited by drought. The Forest Plan's desired conditions will be achieved through fuels and vegetation management actions that will provide timber as a by-product.	The responsible official considered the relevant effects of the proposed plan amendment in this Environmental Assessment, which determined that plan the amendment would have no significant effect on aesthetic values, air quality, cultural and heritage resources, ecosystem services, fish and wildlife species, geologic features, habitat and habitat connectivity, recreation setting and opportunities, riparian areas., scenery, soil, surface water quality, timber, trails, vegetation, viewsheds, wilderness, and other resource values.

Directly Related Substantive Requirement	Purpose of the Substantive Requirement	How the Amended Plan Meets the Substantive Requirement's Purpose	Project Consistency with the Substantive Requirement's Purpose
36 CFR 219.10(a)(5)	When developing the plan components for integrated resource management, the responsible official shall consider 36 CFR 219.10(a)(5), which stipulates that the responsible official shall consider habitat conditions, subject to the requirements of Section 219.9, for wildlife, fish, and plants commonly enjoyed and used by the public for hunting, fishing, trapping, gathering, observing, subsistence, and other activities (in collaboration with federally recognized Tribes, Alaska Native Corporations, other Federal agencies, and State and local governments).	The aspects of substantive requirement Section 219.10(a)(5) that are directly related to the scope and scale of the proposed project-specific plan amendment are narrow. The above sections (see Section 219.9 (a) and (b)) demonstrate how wildlife habitat conditions subject to the requirements of Section 219.9 were considered in development of the proposed project-specific amendment. The proposed project-specific Forest Plan amendment does not directly modify or impact opportunities to hunt, fish, trap, gather, observe, gather subsistence, or other public uses. Each of these common uses of public lands, however, are at risk due to the imminent threat of large, high severity wildfire. The proposed project-specific Forest Plan amendment promotes the ability to move the project area toward a condition more resilient to large-scale, stand-replacing disturbances, such as high severity wildfire or insect outbreaks. Maintaining habitat conditions and a healthy ecosystem is key to providing persistent and sustainable opportunities for the public to hunt, fish, trap, gather, observe or other activities.	The responsible official considered the relevant effects of the proposed plan amendment in this Environmental Assessment, which determined that plan amendment would have no significant effect on applicable wildlife, fish, and plants commonly enjoyed and used by the public for hunting, fishing, trapping, gathering, observing, subsistence, and other activities.
36 CFR 219.10(a)(7)	When developing the plan components for integrated resource management, the responsible official must consider reasonably foreseeable risks to ecological, social, and economic sustainability to the extent relevant to the plan area and public participation and the requirements of 36 CFR 219.7, 219.8, 219.9, and 219.11.	The proposed project-specific Forest Plan amendment was developed in consideration of the threat of large, severe wildfire and other major disturbances to impact ecological, social, and economic sustainability. Fire has been largely excluded from the landscape for nearly a century. Fire modeling conducted by the Forest Service and California Department of	The responsible official considered the relevant effects of the proposed plan amendment in this Environmental Assessment, which determined that plan amendment would have no significant effect on socioeconomic and ecological sustainability.

Directly Related Substantive Requirement	Purpose of the Substantive Requirement	How the Amended Plan Meets the Substantive Requirement's Purpose	Project Consistency with the Substantive Requirement's Purpose
		Forestry and Fire Protection (CAL FIRE) indicates this landscape has some of the highest risk areas in California for high-severity fires. A large, severe wildfire or prolonged drought with accompanying widespread insect or disease infestation would have long-term catastrophic consequences for local communities, forests, air, soils, water, habitats, scenery, recreational opportunities, and local and downstream economies. The sections on 36 CFR 219.8(a)(1) and 219.9(a)(1) above describe how the amended plan addresses risks to ecological sustainability. Social and economic sustainability is considered as the amended plan will allow North Fork Forest Recovery Project to conduct more effective thinning and prescribed fire treatments for enhanced forest resiliency.	
36 CFR 219.10 (a)(8)	36 CFR 219.10(a)(8) stipulates that, in providing for integrated resource management, the responsible official shall consider system drivers, including dominant ecological processes, disturbance regimes and stressors, such as natural succession, wildland fire, invasive species, and climate change, and the ability of terrestrial and aquatic ecosystems of the plan area to adapt to change (Section 219.8(1)(iv)). This consideration re-emphasizes the importance of ecological sustainability and integrity as addressed in 36 CFR 219.8(a)(1) above.	Climate change projections anticipate periods of extended drought and temperatures that will make the landscape hotter and drier (USDA FS 2020). These factors were critical considerations in determining the need for a forest plan amendment. Resilient forests more closely aligned with an active fire regime provide the range of conditions in which terrestrial and aquatic ecosystems evolved and survived prior to European settlement. Reduced stand densities with an emphasis on retaining the largest, healthiest trees, increased stand structural and tree species heterogeneity, will increase forest resilience to severe disturbances, including large-scale, high severity wildfire, insects, disease, drought, and climate change. Aligning forest	The Project's goals and objectives are rooted in the assumption that a resilient landscape is healthier overall and more able to support a fully functioning ecosystem and opportunities for a variety of uses. Increasing ecosystem resilience and integrity are aimed at ensuring the landscape will experience less severe or catastrophic losses because of wildfires, insects, disease, and drought. This is the essence of landscape sustainability and resiliency. To provide a full suite of multiple uses across the Project area, the landscape must be able to support and maintain ecological processes and a diverse community of organisms.

Directly Related Substantive Requirement	Purpose of the Substantive Requirement	How the Amended Plan Meets the Substantive Requirement's Purpose	Project Consistency with the Substantive Requirement's Purpose
		composition and structure with ecological processes, particularly historic active fire regimes, is linked to greater resilience to wildfire and climate change. and other stressors (Kalies and Kent 2016, Larson et al. 2013, Stephens et al. 2016). The amended plan recognizes important system drivers of wildfire and climate change. The amended plan directs active management to: (1) establish, favor retention, and/or promote the growth of larger or older shade- intolerant trees in overly dense stands to meet project objectives more effectively for tree species composition and forest stand density; and (2) promote heterogeneity by providing for opening creation in sub-basins that are departed. These objectives, which are supported by the project-specific plan amendment, are critical to mitigating the threat of large, high severity wildfire and increasing the landscape's resilience to climate change (USDA FS 2019).	
36 CFR 219.11 Timber requirements based on the NFMA The overarching purpose of 36 CFR 219.11 is to ensure forest plans address timber management requirements based on the National Forest Management Act 36 CFR219.11(c) Timber harvest for purposes other than timber production	Compliance with paragraph (c) of this section is intended to support plan components that allow timber harvest for the purposes other than timber production throughout the plan area, or portions of the plan area, as a tool to assist in achieving or maintaining one or more applicable desired conditions or objectives of the plan to protect other multiple use values, and for salvage, sanitation, or other public health or safety needs.	To address the landscape's current departure from historic conditions. The amended plan recognizes the important role timber harvesting plays in achieving desired forest structure, density, and composition across the landscape. The project-specific Forest Plan amendment allows vegetation management (including timber harvest) for the purposes of reducing the risk of undesired wildfire effects and increasing landscape resilience to natural disturbances.	The Proposed Action includes timber harvest as a mechanism for achieving treatment objectives, such as reducing stand density, improving stand structural heterogeneity through retention of tree groups and clumps and creation of gaps and openings, and enhancing tree species composition. Mechanical thinning would be utilized as one tool to achieve these objectives. Forest thinning objectives are aimed at improving wildlife habitat by making it more resilient to severe disturbances and reducing the risk of loss of

Directly Related Substantive Requirement	Purpose of the Substantive Requirement	How the Amended Plan Meets the Substantive Requirement's Purpose	Project Consistency with the Substantive Requirement's Purpose
			human lives, communities, and valuable resources from catastrophic wildfire.
36 CFR 219.11(d)(3) Limitations on Timber Harvest	Compliance with paragraph (d) item (3) of this section is intended to ensure that timber harvest would be carried out in a manner consistent with the protection of soil, watershed, fish, wildlife, recreation, and aesthetic resources The aspects of item (3) directly related to the proposed project-specific Forest Plan amendment are limited to those related to wildlife.	The amended plan is focused on the immediate need for maintaining fire-resilient habitat across the landscape as recommended in Management Approach 2 of the Conservation Strategy (USDA FS 2019, p. 25). The amended plan balances retention of habitat to meet immediate needs of individual California spotted owls while allowing thinning and prescribed fire treatments (including timber harvest) to be conducted to enhance stand- and landscape-level forest health and resiliency.	See sections for 36 CFR 219.9(a) and (b) above.

Appendix C: Treatment Methods

C-1: Prescribed Fire Treatment Methods

Treatment Method	Description
Understory burning	Understory burning is a type of prescribed fire ignited under the forest canopy focused on surface and ladder fuel consumption. Understory burns leave canopy fuels intact and mimic the role of frequent fire in an active fire regime. Understory burning is often used as a follow-up treatment to thinning or pile burning to further reduce surface fuels, maintain desired landscape conditions, and enhance stand health and resiliency. Understory burning may promote snag development and promote shade-intolerant species like ponderosa and Jeffrey pine while reducing the prevalence of species less resilient to fire (e.g., white fir and lodgepole pine). Additional activities often associated with understory burning include temporary and permanent fire control line construction along treatment boundaries following topography that is most favorable to control the burn. Other site preparation work may include large-tree protection (raking), reinforcing containment lines by removing live or dead trees or brush, limbing, bucking, or rearranging fuels to assist with safety and containment. Mop up activities would utilize hand tools to extinguish all heat to a minimum of 25 feet from the containment line.
Pile burning	Pile burning involves igniting piles of cut vegetation resulting from thinning or fuel reduction actions. Piles can be made mechanically using heavy equipment (see Machine piling) or manually (see Hand piling). The location and size of piles are determined by site conditions, but they would be preferentially placed to avoid sensitive areas, such as riparian areas and cultural resource sites, and kept to a manageable size. Piles are typically burned under fall-like conditions, in winter months, or during periods of low fire danger.
Broadcast burning	Broadcast burning is a method of prescribed fire ignited in an area with little to no forest canopy present, such as grasslands, shrublands, or oak woodlands. Broadcast burning is used to reduce fuels and restore wildlife habitat.
Jackpot burning	Jackpot burning is similar to understory or broadcast burning, except instead of targeting the entire forest floor, the target is specific areas with high fuel concentrations (called "jackpots"). Jackpot burns result in mosaic burn patterns, with limited burning in low-fuel concentration areas. Jackpot burning may be an initial or follow-up treatment.

C-2: Variable-Density Thinning Treatment Methods

Treatment Method	Description
Hand thinning	Hand thinning refers to the use of hand tools and hand-operated mechanical tools (including chainsaws) to cut vegetation, trees, and brush to reduce stand density. Hand thinning includes cutting down entire trees as well as limbing or pruning. The resulting slash may be scattered or left in place as surface fuels for understory burning or piled for burning (see <i>Hand piling</i> and <i>Pile burning</i>). Hand thinning is useful for avoiding heavy equipment impacts to cultural sites, wildlife habitat, riparian areas, sensitive resource sites, and known avoidance areas. It can also be used where topographic features prevent heavy equipment use such as steep slopes.
Mechanical thinning	Mechanical thinning involves the use of heavy forestry equipment (e.g. feller-buncher) to remove larger trees. Hand thinning, mastication, chipping, machine piling, or prescribed fire would be used as follow-up treatments. The resulting slash would be machine piled and burned (see <i>Machine piling</i> and <i>Pile burning</i>) or chipped and hauled to a biomass facility (see <i>Chipping</i>). Mechanical thinning treatments would meet the standards and guidelines outlined in the 2004 SNFPA ROD p. 50 – 51 as amended by this project.
Borate stump treatment	Depending on site conditions, conifer stumps >14” in diameter would be treated with a registered borate compound within four to 24 hours after the tree is felled, to prevent the introduction and spread of <i>Heterobasidion</i> root disease (HRD). Within recreation areas or other high value areas such as near structures or powerlines, borate compound would be applied within four hours to all pine and true fir cut stumps >3” in diameter. Application of borax would follow all label directions, as well as all applicable federal, State and local laws. Table C-3 describes Forest Service Region 5 borate stump treatment priorities based on harvest activity and forest condition.

C-3: Forest Service Region 5 borate stump priorities to prevent *Heterobasidion* Root Disease (HRD) v.4.5

Priority	HARVEST ACTIVITY in FOREST TYPE and CONDITION	*TREAT WHICH STUMPS?	WHY
Very low	Salvage high severity burn (nearly all trees killed); plant	NONE	Little connectivity with seedling roots; Most dead roots get infected with competing organisms before seedling roots contact them

Priority	HARVEST ACTIVITY in FOREST TYPE and CONDITION	*TREAT WHICH STUMPS?	WHY
Very low	Clearcut PP/JP, true fir or mixed conifer; any location including roadsides and powerline corridors	NONE	Very low probability of establishing new infection centers
Very low	Thin true fir which has widespread light to heavy HRD	NONE	Borates do not cure existing infection
Low	Thin PP/JP with no current or historic pine HRD within 1700 feet	NONE	Very low atmospheric spore concentration
Low	Thin PP/JP in mixed species stands; few >14" PP/JP stumps	NONE	Small pine stumps don't create HRD centers; small roots get infected fast with competing organisms
Low	Thin PP/JP in mixed species stands; few pine-to-pine root contacts	NONE	HRD won't spread from stumps that don't have root contact with live trees
Low	Thin Doug-fir; incense cedar; sugar pine; other conifers	NONE	Little evidence of HRD problems
Moderate	Salvage low to moderate severity burn (scattered remaining green trees)*	Consider treating >14" PP/JP and >24" juniper stumps having possible root contact with high-value PP/JP. Treat true fir stumps in stands with no fir HRD	Borates do not cure existing infections. Treating pine stumps near high-value pine trees can protect residual pine from HRD. Large juniper stumps may facilitate spread to adjacent pines.
High	Any cutting, PP/JP, true fir in roadside and powerline corridors (including hazard tree removal and salvage* in low to moderate severity burns)	Treat all PP/JP and >24" juniper stumps and true fir stumps >14"	Borates prevent infection; lower tolerance for new HRD centers in these areas. Large juniper stumps may facilitate spread to adjacent pines.
High	Thin PP/JP in mixed species stands; many >14" PP/JP stumps and pine-to-pine root contacts; pine HRD within	>14" PP/JP stumps (also >24" juniper stumps if present)	Borates prevent infection. Large juniper stumps may facilitate spread to adjacent pines.

Priority	HARVEST ACTIVITY in FOREST TYPE and CONDITION	*TREAT WHICH STUMPS?	WHY
	1700 feet (or distance to nearest HRD not known)		
High	Thin true fir with no HRD	>14" fir stumps	Borates prevent infection
Very high	Thin PP/JP; may >14" stumps; pine HRD within 1700 feet (or distance to nearest HRD not known)	>14" PP/JP stumps	Every stump can start HRD centers
Very high	Recreation and Administrative Sites	>3" conifer stumps	Zero tolerance for new HRD centers in these areas means treating smaller stumps of all conifer species

*No need to treat stumps of trees with no needles or stumps of trees killed by fire >18 months earlier.

C-4: Fuels Reduction Treatment Methods

Treatment Method	Description
Hand piling	Hand piling refers to manually moving slash (coarse and fine woody debris created during thinning or site preparation) into piles. Slash would be placed in openings clear of debris so that a hand line down to mineral soil can be created around each pile. Crews would locate piles in areas where they would not damage other timber or residual trees when burned. Piles would be located twice their height away from residual vegetation to minimize risk of fire spreading. Crews would compress slash tightly in piles to ensure full consumption when burned. Piles would be placed outside the boundaries of sensitive resource areas including, but not limited to, historical or archeological sites, sensitive plant populations, annual streambeds or drainages, and roadside gutters and culverts. See Appendix F: Design Features for resource-specific measures.
Machine piling	Machine piling is the process by which woody debris such as tree limbs is moved into piles using forestry equipment such as a bulldozer. Crews would locate piles in areas where they would not damage other timber or residual trees when burned. Piles would be located twice their height away from residual vegetation. Crews would compress slash tightly in piles to ensure full consumption when burned. Piles would be placed outside the boundaries of sensitive resource areas including, but not limited to, historical or archeological sites, sensitive plant populations, annual streambeds or drainages, and roadside

Treatment Method	Description
	gutters and culverts. See Appendix F: Design Features for resource-specific measures.
Mastication	Mastication is a mechanical process that changes the shape, size and distribution of fuels. Whole trees and large brush are broken down into small chunks and left on the forest floor. Mastication is effective for clearing trees along roadsides, ravines and places that could be difficult to reach with other equipment or on foot. Masticated slash may be scattered within the treatment area.
Chipping	Chipping is the use of a woodchipper to process woody debris into relatively uniform small pieces. Chipped material may be removed or left on-site when appropriate in place of piling. Chips would be spread away from the base of trees.
Targeted grazing	“Targeted grazing” refers to controlled and intentional livestock grazing to achieve specific land management objectives. Within the scope of this project, targeted grazing with goats or sheep would be used for fire management feature maintenance and other fuels reduction treatments. Livestock would be fenced or herded within the treatment unit and moved regularly between contiguous treatment units. Grazing operators will install, move, and maintain temporary fencing as needed. Fencing can be placed and herds can be rotated to minimize or avoid unacceptable resource impacts. For treatments along road-based fire management features, operators must keep animals confined within treatment units on either side of the roadway, rotating from one side to the other with appropriate safety measures.

C-5: Hazard Tree Removal Treatment Method

Treatment Method	Description
Hazard tree removal	Hazard tree removal involves identifying, felling, and removing hazard trees capable of striking roads, trails, and structures; and removing felled trees from past fire suppression or rehabilitation activities along high-use roads (maintenance level 2, 3, 4, and 5 NFS roads, county roads, and highways), within and adjacent to developed facilities on NFS lands; and felling certain trees along NFS trails and on NFS land adjacent to private property boundaries that pose a safety risk. Identified hazard trees would be felled using hand tools (such as chainsaws) or mechanical equipment (such as feller-bunchers). Felled trees would be chipped, lopped and scattered, piled and burned; removed for wood products such as lumber, biomass, or personal or commercial firewood; or other similar means of processing or removal. The resulting slash would be piled, lopped and scattered, masticated, chipped, and/or burned (see Fuels reduction and Prescribed fire). Lopped and scattered slash would be shorter than 8 feet and distributed no greater than 18 inches deep.

Treatment Method	Description
	Hazard tree removal specifications will tier to the Region 5 Hazard Tree Guidelines (USDA 2022d).

C-6: Reforestation Treatment Methods

Treatment Method	Description
Site preparation	Site preparation refers to the actions necessary to prepare site conditions for successful reforestation often using mechanical equipment such as a grapple piler. Often one of the first steps would be clearing the site through the removal of existing live and dead vegetation and debris. Herbicide may be applied to prevent shrubs and grasses that may outcompete seedlings prior to the initial planting.
Tree planting	Following site preparation, trees would be planted in identified reforestation treatment areas. Reforestation may occur throughout the project where needed to meet desired conditions. Reforestation would focus on large, high-severity burn patches with high basal area mortality and low probability of natural regeneration, as well as small high-severity burn patches near communities, recreational assets, and infrastructure. Burned areas where live conifer forests persist or are likely to naturally recover would not be targeted for reforestation actions. Climate and ecological factors would be considered in the design and prioritization of tree planting treatments following management recommendations described in the <i>North Fork Forest Recovery Project Climate-wise reforestation assessment</i>. Areas with low predicted climate stress based on modeled climate exposure and relative climate water deficit values would be prioritized for reforestation. Areas with higher predicted climate stress would be planted at lower densities and utilize seeds sourced from populations with current climatic conditions (e.g. temperature, precipitation) that resemble the projected climate of the treatment unit. Serpentine soils and proposed botanical special interest areas would be avoided due to low soil productivity and the need to conserve rare plant habitat from disturbances.
Maintenance/release	Maintenance (also referred to as “release”) may include selective herbicide application or manual and mechanical vegetation treatments such as hand digging or mowing undesirable species. Additional interplanting and/or pre-commercial thinning may occur after the initial planting to reach or maintain desired stocking and/or species preference. See C-10: Herbicide Treatment Methods and Appendix E for more details on herbicide use.

C-7: Invasive Species Management Treatment Methods

Treatment Method	Description
Manual control	Manual control refers to hand pulling, digging, or other hand-tool-based methods to control invasive plant species.
Mechanical control	Mechanical control refers to the use of mechanical equipment such as a mower or weed whacker/whip/eater to cut or mow invasive plant species.
Chemical control (herbicide)	Chemical control refers to the use of herbicides to control invasive plant species. Herbicides would be selected to meet forest standards and regulations and applied using all relevant regulations and best practices. Herbicides could be applied using the herbicide treatment methods listed in C-10: Herbicide Treatment Methods, with method selection depending on a variety of factors including time of year, severity of infestation, presence of sensitive resources (e.g. native plant and wildlife species, including protected species), degree of intermixing of invasive species with sensitive native habitats, access, proximity to surface water, and budget. No aerial application is proposed. See Appendix E for more details on herbicide use.
Native plant propagation	Where appropriate, desirable or ecologically important native plants will be propagated to restore biodiversity. This treatment may occur in highly disturbed areas or as a follow-up treatment to manual, mechanical, or chemical invasive plant control methods.

C-8: Stream and Meadow Restoration Treatment Methods

Treatment Method	Description
Instream structures	The three main types of instream structures proposed to meet desired stream conditions include Beaver Dam Analogues (BDA), Large Woody Debris (LWD) Structures, and Post Assisted Log Structures (PALS). BDAs use native materials to mimic the function of a natural beaver dam to reconnect a stream to the floodplain. Higher groundwater encourages the growth of riparian plants, creating a wetter, more drought-resilient meadow with improved habitat for wildlife. As opposed to mimicking beaver dam structures, PALS are another type of low-tech restoration structure that mimics and promotes the accumulation of large woody debris. Both PALS and BDAs are hand-built, temporary structures made out of natural materials, intended to become self-sustaining influences on stream geomorphology. LWD structures feature large wood that moderates stream flow and serves as aquatic habitat. LWD would include anchored and non-anchored structures, chop and drop LWD, or helicopter-distributed LWD. Additional engineered and non-engineered process-based structures that would be considered to restore stream and riparian areas include

Treatment Method	Description
	bank protection and deflection, bioengineering, wood jams, and directionally felled trees. Where feasible, process-based structures would be built by hand using native materials. Potential impacts of surrounding and downstream infrastructure such as roads, campgrounds, trails, and private property would be evaluated before the construction of any process-based treatments in the project area. Follow-up treatments of BDA and/or PALS may be required to help maintain their structural integrity and effectiveness. Common maintenance activities may include adding more wood or posts to existing structures, building new structures where others have washed downstream, and building existing structures further into the floodplain.
Riffle augmentation	Riffle augmentation is the process of adding material (e.g. gravel, rock) to raise the streambed elevation at specified locations within a stream channel or reach. This treatment would be used to reduce the conveyance capacity of oversized channels on stream reaches that have been disconnected from their historic floodplains. Riffles would be installed to reduce erosive force, increase groundwater levels, increase dissolved oxygen levels, and expand the floodplain.
Channel fill	Channel fill (partial or complete) is a hydrological improvement method that involves adding soil or debris to a channel to raise its base elevation or to arrest ongoing head cutting or streambank erosion. This method would use earth-moving equipment to reshape and fill erosional features and incised stream channels that are disconnected from their historic floodplains or otherwise causing excessive erosion. This technique would be used when it is not possible to restore floodplain connectivity or reduce erosion through process-based techniques. Channel fill would also be used to redirect surface water flow back to its historic floodplain where flow paths have been altered. Channel fill treatments would aim to achieve a material balance by utilizing soil and debris from on-site borrow areas, where feasible. If all fill material cannot be sourced on-site, some may be imported from a nearby quarry. Before filling the channel, the sod and topsoil from within the channel would be removed by an excavator and positioned near the channel. Once the fill material is transported into the channel, the sod and topsoil would be replanted and covered with erosion control fabric. Erosion control fabric is made from biodegradable material and is used to stabilize soil and reduce erosive forces.
Bank armoring	Streambank armoring is the process of reinforcing a streambank with protective covering (e.g. rocks, vegetation, or engineering materials such as jute mats) to reduce bank cutting and erosion due to peak flows.

Treatment Method	Description
	Bank armoring would be utilized as needed in the project area, especially in post-fire areas and recreation sites near water.
Borrowing	Borrowing is the technique of excavating soil from an upland area to fill down-cut areas impacted by erosion. This option would be used when it is not feasible to purchase fill. Earth-moving equipment would be used to take borrowed material to use in channel-fill activities. Afterward, the borrow areas would be shaped and reclaimed/revegetated.
Hillslope contouring	Hillslope contouring would be used to help provide the remaining fill material needs. Hillslope contouring restores hillsides to their natural topography to avoid capturing surface and subsurface water flows. Recontouring can also aid in defining incised channel areas and providing fill material. These sites would be revegetated post-recontouring.
Grade control structures	Grade control structures would be composed of large rocks which help to capture sediment, reduce erosive forces, promote regular floodplain inundation, and maintain stream bed elevation.
Meadow vegetation treatments	Vegetation treatments to restore the hydrologic and ecological function of meadows include conifer removal, willow propagation, and the installation of temporary fencing.

C-9: Transportation Treatment Methods

Treatment Method	Description
Road maintenance and improvement	Road maintenance and improvement refers to actions on existing NFS roads within the project area that are necessary to facilitate safe access to treatment areas while minimizing negative hydrologic impact. Maintenance actions may include, but are not limited to: grading, clearing, roadside brushing, reconditioning or reconstructing existing drainage structures, culvert and ditch cleaning, culvert removal or replacement, hazard tree removal, and aggregate surfacing. NFS roads showing signs of active erosion, such as rills and gullies, or hydrologic connectivity, where road drainage routes directly to a water body, would be identified for improvement or re-alignment. Design and implementation would comply with relevant Best Management Practices. Improvement actions may include, but would not be limited to: outsloping or insloping the roadbed, installing new drainage features, such as rolling dips, critical dips, culvert replacement and installations (removal and resizing), fillslope armor, bridge installation, sediment basins, armored fill crossings, dissipater rock, cut/fill ditch, or road resurfacing. Some road segments may need realignment or relocation to treat hydrologic connectivity (i.e. sever the connection between the road segment and a nearby stream channel). Undersized culverts would

Treatment Method	Description
	be replaced with armored crossings or culverts sized to meet or exceed 100-year flood flows. Culverts sized to meet or exceed 100-year flood flows will reduce the likelihood of crossing failure and may facilitate aquatic organism passage. Realignment actions may include all facets of road construction such as installing drainage structures, blading, tree removal, etc. The abandoned road alignment would then be obliterated potentially removing drainage structures, using sub-soiling, ground cover placement, blockage berms and / or reseeding. Where road or crossing improvement actions occur, additional instream construction may be required to restore natural stream grade and channel function within the affected areas. Instream construction surrounding road and crossing improvements may include channel fill, grade control structure installation, and revegetation.
Temporary road construction	Temporary roads are constructed to facilitate treatment and would be obliterated after the project ends. Existing NFS roads will be used wherever possible, and unauthorized routes and previously tilled temporary roads could be used when available. Construction of new temporary roads will generally be designed to limit skidding distances to less than ¼ mile.
Route obliteration	Route obliteration refers to actions to permanently close temporary roads and unauthorized routes such as user-created trails within the project area. Obliteration may be proposed in order to limit undesired access, increase hillslope stability, minimize erosion, restore natural drainage patterns, protect endangered plants and wildlife, and restore aquatic and wildlife habitat. No NFS road decommissioning is proposed. Obliteration actions include, but are not limited to, treatments such as subsoiling or ripping the roadbed to reduce compaction, removing drainage structures (such as culverts), constructing waterbars, recontouring to original slopes, restoration of vegetation cover, improvement to water drafting sites, and blocking vehicle access.

C-10: Herbicide Treatment Methods¹⁹

Treatment Method	Description
Foliar application	This method applies herbicide directly to the leaves. An adjuvant or surfactant is often needed to enable the herbicide to penetrate the plant cuticle, a thick, waxy layer present on leaves and stems of most plants. Applicators for foliar application include backpack sprayers and hand-

¹⁹ Additional information on proposed herbicide use, including active ingredients, application rates, grazing restrictions, and risk assessments may be found in Appendix E: Herbicide.

Treatment Method	Description
	pumped spray or squirt bottles, which can target very small plants or parts of plants.
Spot spraying	Spot spraying is like foliar spraying but would be used for larger sized plants and/or population of plants. The focus still is on treating individual plants, but over a larger area. Applicators would typically be backpack sprayers. Because of the potential to treat larger areas and larger sized vegetation, this method has a slightly higher potential for drift.
Broadcast	Broadcast applications may be used in areas dominated by invasive species, such as yellow star thistle growing throughout a grassland area or Spanish broom along a highway. Selective herbicides would be used where target species are growing amongst desirable species. This application involves using boom or other controlled sprayers to deliver an even spray over the infested area. No aerial herbicide applications would be conducted.
Frill/ Hack and Squirt	The frill method, also called the “hack and squirt” treatment, is often used to treat woody species with large, thick trunks. The tree is cut using a sharp knife, saw, or ax, or drilled with a power drill or other device. Herbicide is then immediately applied to the cut with a backpack sprayer, squirt bottle, syringe, or similar equipment.
Cut-Stump	This method is often used on woody species that normally re-sprout after being cut. Cut down the tree or shrub, and immediately spray or squirt herbicide on the exposed cambium (living inner bark) of the stump. The herbicide must be applied to the entire inner bark (cambium) within minutes after the trunk is cut. The outer bark and heartwood do not need to be treated since these tissues are not alive, although they support and protect the tree’s living tissues. The cut stump treatment allows for a great deal of control over the site of herbicide application; therefore, has a low probability of affecting non-target species or contaminating the environment. It also requires only a small amount of herbicide to be effective.
Cut, Re-sprout, and Spray or Paint/Daub	This method is similar to cut-stump, but involves waiting for cut plant to resprout before application. Cut 1-2 months before spraying. Apply herbicide when resprouts are 2-4 feet tall, but most effective in early fall through winter when plant chlorophyll is transferred to roots. Herbicide should be applied on dry days and during low winds.
Stem injection	Herbicides can be injected into tree stems using a needle, syringe, or special cutting tools, such as basal injectors or breast height injectors.
Basal bark treatment	Herbicide is applied to the base of individual woody plants or stems - individual plant treatment. The herbicide penetrates through the bark to the cambium, where it translocates to roots and stems for complete

Treatment Method	Description
	control. Used for trees less than 6 inches in diameter and trees that are too tall for foliar application.
Wicking application	Applying herbicide using a wick or rope soaked in herbicide from a reservoir attached to a handle. The wetted wick is used to wipe or brush herbicide over the weed.

C-11: Recreation Treatment Methods

Treatment Method	Description
Trail building	Trail building refers to the design, construction, and maintenance of trails. Trail building actions include, but are not limited to: clearing vegetation through mechanical or manual methods, grading, and installation of culverts, waterbars, and signage and route markers.
Facility improvements	Proposed facility improvements may include utilities (water, electrical), host sites, shower facilities, additional parking, improved, paved camping spurs, and upgraded restrooms.

Appendix D: Treatment Focus Areas

D-1: WUI Treatment Focus Areas

Area	Description	Desired Conditions
Defense Zone	The wildland urban intermix zone (WUI) is an area where human habitation is mixed with areas of flammable wildland vegetation. It extends out from the edge of developed private land into Federal, private, and State jurisdictions. The WUI is comprised of two zones: the defense zone and the threat zone. The WUI defense zone is the buffer in closest proximity to communities, areas with higher densities of residences, commercial buildings, and/or administrative sites with facilities. Defense zone boundaries are determined at the project level following national, regional and forest policy. Local fire management specialists determine the extent, treatment orientation, and prescriptions for the WUI based on historical fire spread and intensity, historical weather patterns, topography, access. Defense zones should be of sufficient extent that fuel treatments within them will reduce wildland fire spread and intensity sufficiently for suppression forces to succeed in protecting human life and property. (SNFPA ROD p. 40) WUI defense zones are spatially exclusive with WUI threat zones.	• Stands are fairly open and dominated primarily by larger, fire tolerant trees. • Surface and ladder fuel conditions are such that crown fire ignition is highly unlikely. • The openness and discontinuity of crown fuels, both horizontally and vertically, result in very low probability of sustained crown fire. (SNFPA ROD p. 40) • Hazard trees on NFS land adjacent to private property are removed.
Threat Zone	The WUI threat zone typically buffers the defense zone; however, a threat zone may be delineated in the absence of a defense zone under certain conditions, including situations where the structure density and location do not provide a reasonable opportunity for direct suppression on public land, but suppression on the private land would be enhanced by fire behavior modification on the adjacent public land.	Under high fire weather conditions, wildland fire behavior in treated areas is characterized as follows: • Flame lengths at the head of the fire are less than 4 feet. • The rate of spread at the head of the fire is reduced to at least 50% of pre-treatment levels.

Area	Description	Desired Conditions
	Threat zone boundaries are determined at the project level following national, regional and forest policy. Threat zones generally extend approximately 1¼ miles out from the defense zone boundary; however, actual extents of threat zones are based on fire history, local fuel conditions, weather, topography, existing and proposed fuel treatments, and natural barriers to fire. Fuels treatments in these zones are designed to reduce wildfire spread and intensity. Strategic landscape features, such as roads, changes in fuels types, and topography may be used in delineating the physical boundary of the threat zone. (SNFPA ROD p. 40) WUI threat zones are spatially exclusive with WUI defense zones.	• Hazards to firefighters are reduced by managing snag levels in locations likely to be used for control in prescribed fire and fire suppression, consistent with safe practices guidelines. • Production rates for fire line construction are doubled from pre-treatment levels. • Tree density has been reduced to a level consistent with the site's ability to sustain forest health during drought conditions. (SNFPA ROD p. 41) • Hazard trees on NFS land adjacent to private property are removed.

D-2: Wildlife Habitat Treatment Focus Areas

Area	Description	Desired Conditions
California spotted owl protected activity centers (PACs)	California spotted owl protected activity centers (PACs) are delineated surrounding each territorial owl activity center detected on National Forest System lands since 1986. Owl activity centers are designated for all territorial owls based on: (1) the most recent documented nest site, (2) the most recent known roost site when a nest location remains unknown, and (3) a central point based on repeated daytime detections when neither nest or roost locations are known. PACs are delineated to: (1) include known and suspected nest stands and (2) encompass the best available 300 acres of habitat in as compact a unit as possible. The best available habitat is selected for California spotted owl PACs to include: (1) two or more tree canopy layers; (2) trees in the dominant and co-dominant crown classes averaging 24 inches DBH or greater; (3) at least 70 percent tree canopy cover (including hardwoods); and (4) in descending order of priority, CWHR classes 6, 5D, 5M, 4D,	Stands in each PAC have: • at least two tree canopy layers • dominant and co-dominant trees with average diameters of at least 24 inches DBH • at least 60 to 70 percent canopy cover • some very large snags (greater than 45 inches DBH) • snag and down woody material levels that are higher than average (SNFPA ROD p. 37)

Area	Description	Desired Conditions
	and 4M and other stands with at least 50 percent canopy cover (including hardwoods). Aerial photography interpretation and field verification are used as needed to delineate PACs. As additional nest location and habitat data become available, boundaries of PACs are reviewed and adjusted as necessary to better include known and suspected nest stands and encompass the best available 300 acres of habitat. When activities are planned adjacent to non-national forest lands, available databases are checked for the presence of nearby California spotted owl activity centers on non-national forest lands. A 300-acre circular area, centered on the activity center, is delineated. Any part of the circular 300-acre area that lies on national forest lands is designated and managed as a California spotted owl PAC. PACs are maintained regardless of California spotted owl occupancy status. However, after a stand-replacing event, evaluate habitat conditions within a 1.5-mile radius around the activity center to identify opportunities for re-mapping the PAC. If there is insufficient suitable habitat for designating a PAC within the 1.5-mile radius, the PAC may be removed from the network. (SNFPA ROD p. 37)	
American goshawk protected activity centers (PACs)	As described in the 2004 SNFPA ROD, American goshawk (formerly northern goshawk) protected activity centers (PACs) are delineated surrounding all known and newly discovered breeding territories detected on National Forest System lands. American goshawk PACs are designated based upon the latest documented nest site and location(s) of alternate nests. If the actual nest site is not located, the PAC is designated based on the location of territorial adult birds or recently fledged juvenile goshawks during the fledgling dependency period.	Stands in each PAC have: • at least two tree canopy layers • dominant and co-dominant trees with average diameters of at least 24 inches DBH • at least 60 to 70 percent canopy cover • some very large snags (greater than 45 inches DBH)

Area	Description	Desired Conditions
	PACs are delineated to: (1) include known and suspected nest stands and (2) encompass the best available 200 acres of forested habitat in the largest contiguous patches possible, based on aerial photography. Where suitable nesting habitat occurs in small patches, PACs are defined as multiple blocks in the largest best available patches within 0.5 miles of one another. Best available forested stands for PACs have the following characteristics: (1) trees in the dominant and co-dominant crown classes average 24 inches DBH or greater; (2) in westside conifer and eastside mixed conifer forest types, stands have at least 70 percent tree canopy cover; and (3) in eastside pine forest types, stands have at least 60 percent tree canopy cover. Non-forest vegetation (such as brush and meadows) should not be counted as part of the 200 acres. As additional nest location and habitat data become available, PAC boundaries are reviewed and adjusted as necessary to better include known and suspected nest stands and to encompass the best available 200 acres of forested habitat. When activities are planned adjacent to non-national forest lands, available databases are checked for the presence of nearby American goshawk activity centers on non-national forest lands. A 200-acre circular area, centered on the activity center, is delineated. Any part of the circular 200-acre area that lies on national forest lands is designated and managed as an American goshawk PAC. PACs are maintained regardless of American goshawk occupancy status. PACs may be removed from the network after a stand-replacing event if the habitat has been rendered unsuitable as an American goshawk PAC and there are no opportunities for re-	• snag and down woody material levels that are higher than average (SNFPA ROD p. 38)

Area	Description	Desired Conditions
	mapping the PAC in proximity to the affected PAC. (SNFPA ROD p. 38)	
California spotted owl territory	California spotted owl territories are defined by the following characteristics: A 1,000-acre circle, which includes the 300-acre PAC, surrounding territorial owls, centered on a documented nest site or roost site if nest location is unknown or central point of repeated daytime detections when neither nest nor roost locations are known. • Territory boundaries should include the entire PAC and be adjusted to include suitable habitat in the most sustainable areas (moist vegetation types and site conditions, often in drainages or on north-facing slopes) and to exclude unsuitable habitat. • Contains diverse structural and seral conditions to facilitate nesting, roosting, and foraging. • May overlap adjacent territories. • Territories are established and retired together with PACs. When activities are planned adjacent to non-national forest lands containing known CSO nest stands, a 1,000-acre circle territory should be delineated around known CSO activity centers on non-national forest lands. Any part of the circular core area that lies on national forest lands is designated and managed as a CSO territory.	At least 50 to 60 percent (depending on the terrestrial vegetation type and site conditions) of each California spotted owl territory, including the PAC, consists of HQNR habitat in large enough patches to provide interior stand conditions (generally 1 to 2 tree heights from an edge) surrounded by BANRF, preferably with a greater proportion of HQNR to BANRF, particularly closer to the nest. The remainder of the territory consists of a diversity of many different structure and canopy classes. For areas where multiple territories comprise over 75 percent of a watershed (typically a HUC 12 unit and greater than 10,000 acres in size) at least 30-50 percent of the watershed consists of the HQNR and BANRF habitat and the remainder of the territory consists of a diversity of many different structure and canopy classes.
California spotted owl home range core areas (HRCA)	A home range core area is established surrounding each territorial spotted owl activity center detected after 1986. The core area amounts to 20 percent of the area described by the sum of the average breeding pair home range plus one standard error. Home range core area sizes vary by Forest; on the Plumas National Forest home range core areas are 1,000 acres.	HRCAs consist of large habitat blocks that have: • at least two tree canopy layers • at least 24 inches DBH in dominant and co-dominant trees

Area	Description	Desired Conditions
	Aerial photography is used to delineate the core area. Acreage for the entire core area is identified on national forest lands. Core areas encompass the best available California spotted owl habitat in the closest proximity to the owl activity center. The best available contiguous habitat is selected to incorporate, in descending order of priority, CWHR classes 6, 5D, 5M, 4D and 4M and other stands with at least 50 percent tree canopy cover (including hardwoods). The acreage in the 300-acre PAC counts toward the total home range core area. Core areas are delineated within 1.5 miles of the activity center. When activities are planned adjacent to non-national forest lands, circular core areas are delineated around California spotted owl activity centers on non-national forest lands. Using the best available habitat as described above, any part of the circular core area that lies on national forest lands is designated and managed as a California spotted owl home range core area. (SNFPA ROD p. 39)	• a number of very large (greater than 45 inches DBH) old trees • at least 50 to 70 percent canopy cover • higher than average levels of snags and down woody material (SNFPA ROD p. 40)
Snag retention areas	Snags (standing dead trees) are integral to forest structure and function, providing habitat to birds, small mammals, and other wildlife. Retaining snags on the landscape is necessary to support wildlife foraging and nesting needs. Snag retention strategies will vary based on the target species and site conditions. The black-backed woodpecker favors high- and moderate-severity burn patches with high snag densities, while other species of concern, such as Lewis' woodpecker, olive-sided flycatcher, and mountain bluebird prefer well-spaced snags through open forest types. Suitable high-density snag retention areas include moderate- to high-severity burned areas greater than 1 mile from major roads, homes, powerlines, and other infrastructure. Steep forest that is	High-density snag retention areas • Dead trees, both standing and fallen, meet wildlife habitat needs. • An average of 6 or more snags (DBH >15") per acre. (SNFPA ROD p. 39). • Some very large snags (greater than 45 inches DBH) • more than 10 tons per acre of coarse woody debris in decay classes 1 and 2 • Snags are clumped and distributed irregularly across the landscape. • Snags are strategically retained to avoid risk to communities and forest workers (including fire

Area	Description	Desired Conditions
	inaccessible to machinery and would be used less by humans would be preferred. High-density snag pockets adjacent to green forest are ideal to manage for black-backed woodpecker habitat. Potential high-density snag retention areas within the project area were identified using GIS to subtract WUI defense zones and potential reforestation areas from black-backed woodpecker habitat suitability data.	suppression personnel). Snags do not present a public safety danger. Low-density snag retention areas • Within westside mixed conifer and ponderosa pine forest types, retain four of the largest snags per acre. • Within eastside pine and eastside mixed conifer forest types retain three of the largest snags per acre. • Dead trees, both standing and fallen, meet wildlife habitat needs.
Meadow habitat areas	Meadows within the project area provide valuable habitat for a range of plant and wildlife species.	• Large wood is recruited in areas where high-severity fire may have removed large wood from wetland habitats. • Beaver habitat is improved, particularly in wet meadow conditions. • Beaver dam analogs are utilized where stream conditions warrant to arrest erosion and retain water in the system. • Where appropriate, American bullfrog populations are managed to prevent bullfrog population expansion. • Species composition and structural diversity of plant and animal communities in riparian areas, wetlands, and meadows provide desired habitat conditions and ecological functions. (SNFPA ROD p. 32) • The ecological status of meadow vegetation is late seral (50 percent or more of the relative cover of the

Area	Description	Desired Conditions
		herbaceous layer is late seral with high similarity to the potential natural community). A diversity of age classes of hardwood shrubs is present, and regeneration is occurring. • Meadows are hydrologically functional. Sites of accelerated erosion, such as gullies and headcuts are stabilized or recovering. Vegetation roots occur throughout the available soil profile. Meadows with perennial and intermittent streams have the following characteristics: (1) stream energy from high flows is dissipated, reducing erosion and improving water quality, (2) streams filter sediment and capture bedload, aiding floodplain development, (3) meadow conditions enhance floodwater retention and groundwater recharge, and (4) root masses stabilize stream banks against cutting action. (SNFPA ROD p. 43) • Streamflow patterns and sediment regimes resemble pre-settlement conditions. • Meadows provide ample habitat for wildlife and rare plant species.

D-3: Designated Lands Treatment Focus Areas

Area	Description	Desired Conditions
Inventoried Roadless Areas (IRAs)	Inventoried Roadless Areas (IRAs) are designated National Forest System lands managed by regulations known as “roadless rules” that limit road construction, reconstruction, and timber harvest within IRAs. These regulations protect IRAs from development in perpetuity.	• Roadless area characteristics and values, as defined in the 2001 Roadless Area Conservation Rule (36 CFR 294), are conserved and protected. • Roadless areas support diverse plant and animal communities that are resilient to the impacts of severe disturbances

Area	Description	Desired Conditions
	Proposed actions in IRAs will be focused on restoring the ecological role of fire and minimizing the impacts of severe disturbances on roadless area characteristics. Under some conditions, high-risk stands that are not in a condition to receive stand-alone prescribed fire treatment, and are accessible by existing roads, would receive VDT or mechanical post-fire snag and fuels reduction treatments.	• The ecological role of fire is restored to roadless areas • Roadless areas provide quality habitat for wildlife • Roadless areas are naturally appearing landscapes with high scenic quality
Research Natural Area (RNA)	Research Natural Areas (RNAs) are specially designated areas in as near a natural condition as possible that exemplify typical or unique vegetation and associated biotic, soil, geologic, and aquatic resources. These areas are established by the Forest Service to preserve representative samples of ecological communities primarily for scientific and educational purposes. (FSM 1905) The project area contains the 73-acre Wheeler Peak unit of the Mud Lake Research Natural Area (RNA), which was established to protect rare stands of Baker Cypress for research and education and to maintain biological diversity. Baker Cypress is an ancient, fire-adapted conifer species that persists under high-severity, infrequent fire regimes. The Wheeler Peak unit burned at mixed-severity during the Dixie Fire, with approximately half of the unit burning at high severity. This project proposes implementation of strategic fuels reduction treatments to address high snag densities on southwest-facing slopes south of the Wheeler Peak Unit. The objective is to reduce the risk of a future high-severity fire eliminating the immature population of Baker Cypress, and to promote wildlife habitat and landscape heterogeneity. To improve opportunities for fire management of Wheeler Peak Unit in the event of a wildfire,	• The Wheeler Peak unit of the Mud Lake RNA provides habitat for Baker Cypress. • The RNA is defensible and the landscape surrounding the RNA is heterogeneous and has low amounts of hazardous fuels. • Baker Cypress is protected from future high-severity fire before existing populations reach cone-bearing maturity. • The RNA provides suitable habitat for regeneration of future Baker Cypress communities.

Area	Description	Desired Conditions
	permanent fire control lines are proposed along roads and existing dozer lines outside the unit.	
Special Interest Areas (SIAs)	Several proposed special interest areas, including Red Hill, Fales Basin, and an expansion of the established Butterfly Valley Botanical Area are located within the project area. Red Hill and Fales Basin have been managed as formally designated SIAs since their proposed special interest designation in 1996. These areas are designated to protect diverse existing populations of rare and endangered California native plants. All three SIAs burned at moderate to high severity in the Dixie Fire. Pre-existing projects within these areas, such as thinning in the Butterfly Valley Botanical Area proposed expansion, and maintenance of existing Dixie Fire-era firelines will continue. Actions proposed in this project will focus on reducing fire risk to SIAs through fuels reduction across the broader landscape. Where accessibility permits, slope stabilization, thinning, snag reduction, and pile burning may take place within the SIAs. All actions in SIAs will be designed to maintain and improve diverse, robust native plant communities.	• Proposed botanical Special Interest Areas (SIAs) provide high-quality habitat for rare plant species. • Significant botanical, cultural/historical, geological, and scenic sites are protected, managed, and interpreted. • SIAs are resilient to severe disturbances. • Remaining sensitive and rare plant species habitat is protected. • The landscape surrounding SIAs is heterogeneous with low amounts of hazardous fuels.
Eligible Wild and Scenic Rivers	While there are no designated Wild and Scenic Rivers located within the project area, there are approximately 39 miles of eligible Wild and Scenic Rivers present in the project area. These river segments have been identified by the Plumas National Forest as having characteristics of Wild and Scenic Rivers; they are “free-flowing” and possess one or more “outstandingly remarkable values” (ORVs). They are “free-flowing” in that they exist or flow in a natural condition without impoundment, diversion, straightening, riprapping, or other modification of the waterway. ORV categories include scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values. Eligible rivers are classified based on their ORVs and existing conditions	• The ORVs for which eligible Wild and Scenic Rivers are candidates for designation are protected and preserved for the benefit and enjoyment of present and future generations. • Free-flowing conditions of eligible Wild and Scenic Rivers are preserved. • Human influence may be evident, but does not interfere with or impede the natural succession of river ecosystems.

Area	Description	Desired Conditions
	into one of three types: wild, scenic, or recreational. Wild rivers are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. Scenic rivers are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads. Recreational rivers are readily accessible by road or rail and may have some development along their shorelines. They may have undergone some impoundment or diversion in the past.	

D-4: Fire Recovery Treatment Focus Areas

Area	Description	Desired Conditions
Moderate- and mixed-severity	Moderate-severity burned areas are defined as areas that experienced between 25% and 75% basal area loss following the 2021 Dixie Fire using RAVG data. Mixed-severity refers to areas with a mix of burn severity where basal area loss averages greater than 25%. Actions in moderate- and mixed-severity patches may include fuels reduction, prescribed fire, and invasive species management.	• Standing and down dead fuels are reduced to reduce the risk of future high-severity fires. • Dead trees, both standing and fallen, meet wildlife habitat needs. • Where possible, areas treated to reduce fuel levels also provide for the successful establishment of early seral stage vegetation. • Snags are clumped and distributed irregularly across treated areas.
High-severity	High-severity burned areas are those areas that experienced a basal area loss greater than 75% following the 2021 Dixie Fire using RAVG data. Actions in high-severity patches may include fuels reduction, prescribed fire, reforestation, and invasive species management. Large patches of high-severity are contiguous high-severity areas greater than 100 acres.	• Standing and down dead fuels are reduced to reduce the risk of future high-severity fires. • Dead trees, both standing and fallen, meet wildlife habitat needs. • Where possible, areas treated to reduce fuel levels also provide for the successful establishment of early seral stage vegetation.

Area	Description	Desired Conditions
	The focus in these patches will be restoring conifer forests to the landscapes through strategic climate-informed reforestation.	• Snags are clumped and distributed irregularly across treated areas.

D-5: Fire Management Features Treatment Focus Areas

Area	Description	Desired Conditions
Permanent fire control lines	Permanent fire control lines are built or natural landscape features used to control a fire. Existing landscape features such as roads, rivers, ridges, trails, rock outcrops, and pre-existing fuel breaks and dozer lines from past fires would be used as fire control lines wherever possible. Where infeasible or absent, new fire control lines would be constructed. In most cases, permanent fire control lines would be constructed using mechanical methods. Where mechanical equipment is not feasible control lines would be constructed by hand. The standard proposed treatment along ingress-egress routes consists of snag removal 200 ft from either side of the centerline, thinning trees and vegetation 150 feet from the centerline of the road down to a 10 percent shaded fuel break, and removing trees and vegetation greater than 2 feet tall on 50 feet of either side of the road. Maintenance would continue indefinitely and would be performed using manual and mechanical thinning, fuels reduction, and prescribed fire methods. Wherever possible, permanent fire control lines will avoid CSO and NOGO PACs. However, where PAC avoidance is not possible, treatments would maintain stands of highest quality nesting and roosting habitat within PACs to the extent possible while meeting fire hazard reduction objectives and maintaining public and firefighter safety. Acres of fire management features maintained	• Permanent fire control lines provide holding points for prescribed fire and wildfire suppression activities. • Communities and infrastructure are defensible from catastrophic wildfire. • Permanent fire control lines are designed to minimize impacts to forest and watershed resources, including protected wildlife habitat.

Area	Description	Desired Conditions
	within a PAC would be included in the 100 acres within which CSO habitat quality can be reduced outside of HQNR habitat (see STD-PAC-01 in Project-Specific Forest Plan Amendments B).	
Ingress-egress routes	Ingress-egress routes are roads that can be used by communities to evacuate during a fire and by fire suppression personnel to access an area for suppression actions. The standard proposed treatment along ingress-egress routes consists of snag removal 200 ft from either side of the centerline, thinning trees and vegetation 150 feet from the centerline of the road down to a 10 percent shaded fuel break, and removing trees and vegetation greater than 2 feet tall on 50 feet of either side of the road. Maintenance would continue indefinitely and would be performed using manual and mechanical thinning, fuels reduction, and prescribed fire methods.	• Identified evacuation routes through NFS land are clear of hazard trees and provide safe transport for community members and fire suppression personnel.

D-6: Other Areas

Area	Description	Desired Conditions
General forest matrix	The general forest matrix refers to all forested land that does not fall under one of the categories above. The primary treatments within the general forest matrix treatment focus area are variable-density thinning and fuels reduction.	• Forest structure and function are aligned with present and future conditions under fire regime with frequent, low-severity fire. • Relative stand density index (rSDI) values range between 25-35% of maximum. • Landscapes exhibit high levels of horizontal and vertical diversity • Stands are composed of roughly even-aged vegetation groups, varying in size, species composition, and structure. Individual vegetation

Area	Description	Desired Conditions
		groups range from less than 0.5 to more than 5 acres in size. • Tree sizes range from seedlings to very large-diameter trees. • Species composition varies by elevation, site productivity, and related environmental factors. • Multi-tiered canopies, particularly in older forests, provide vertical heterogeneity. • Dead trees, both standing and fallen, meet wildlife habitat needs. • Where possible, areas treated to reduce fuel levels also provide for the successful establishment of early seral stage vegetation. • Snags are clumped and distributed irregularly across treated areas. • Stands within westside mixed conifer and ponderosa pine forest types retain four of the largest snags per acre. • Stands within eastside pine and eastside mixed conifer forest types retain three of the largest snags per acre. (SNFPA ROD p. 48, 51-52)
National Forest System (NFS) roads	National Forest System (NFS) roads, or “system roads,” are inventoried, maintained, and managed by the Forest Service and are necessary for the protection, administration, and use of National Forests.	• Transportation systems are sustainable and reasonably safe. • Transportation systems provide access for the use and enjoyment of NFS lands. (FSM 7710.2) • Transportation systems and their use have minimal impacts on heritage and cultural sites.

Area	Description	Desired Conditions
		• Road activities maintain, restore, or enhance water quality and habitat for riparian and aquatic species. • Stream crossings meet or exceed the 100-year flood standard for bedload and debris flows. • Roads avoid wetlands and meadows and minimize effects on natural wetland flow patterns. • Road surfaces are restored and protected to resist deformation and damage to drainage structures. Additional drainage features support the longevity of the road and improve water quality.
Trails	This project proposes the construction and maintenance of approximately 39 miles of non-motorized and motorized (open to class 1 e-bikes only) near the communities of Greenville and Taylorsville. Where appropriate, permanent fire control lines will be analyzed for potential addition to the Forest’s recreational trail network.	•An ecologically, socially, and economically sustainable trail system provides a range of high-quality recreation experiences for different use types and varied user skill levels. • The trail system and its use have minimal impacts on resources, including wildlife, vegetation, heritage and cultural sites, and watersheds. • Trailheads are well-designed and maintained. • Appropriate connector trails enhance loops within the existing network and provide trail access to local communities. • Unauthorized trails are not present in the forest. • The sustainability of the trail network is supported by partner groups. • Trail information is clearly communicated to the public and promotes a responsible user ethic.

D- 7: Cultural Stewardship Treatment Focus Area

Area	Description	Desired Conditions
Maidu Stewardship Project Area (MSPA)	Within the project footprint, select areas have been identified for cultural stewardship by local Tribes or Tribal entities. For example, a variety of stewardship activities are proposed for an area near Greenville, referred to as the Maidu Stewardship Project Area (MSPA). This area is approximately 1,500 acres with elevations that range from 3,600 to 4,600 feet. This area is within Indian Valley, the ancestral home of the indigenous Mountain Maidu people and home of the largest Native American population in Plumas County. The Maidu community began assessment work for the MSPA around 1970. A proposal developed by the Maidu Cultural and Development Group (MCDG) in 1997 consisted of two key elements: 1) collaborative communication protocols, and 2) demonstration of traditional ecological knowledge (TEK). This proposal was nominated as a pilot project by the PNF Forest Supervisor, through the Forest Service Pacific Southwest Regional Office (RO) and the Washington Office (WO) in September of 1997. Notice of selection as one of 22 pilot projects was sent from the WO to the MCDG in September of 1998. Other locations beyond the MSPA will be identified as areas for cultural stewardship, depending on their significance and feasibility.	• Culturally important plant species are enhanced through Maidu knowledge and techniques. • Riparian areas are managed to increase the availability of quality maple and certain types of willow used by basket weavers. • Beargrass is managed for. • Food sources, such as bulbs, corms, and tubers, are enhanced. • Acorn production is enhanced. • Forest stands are healthy and resilient due to Maidu management activities, and catastrophic wildfire risks are reduced. • Cultural resources are protected and enhanced.

Appendix E: Herbicides

The Human Health and Ecological Risk Assessment (HHERA) describes potential effects of proposed herbicide applications in detail. The HHERA is available by request and in the project record.

E-1: Proposed herbicide active ingredients, application rates and methods, chemical characteristics, and biological timing for proposed treatments

Active ingredient Measured as active ingredient (a.i.) or acid equivalent (a.e.)	Proposed use²⁰	Expected application rate lbs a.i. or a.e. per acre	Maximum application rate lbs a.i. or a.e. per acre	Application method(s)	Selectivity	Action mechanism	Biological timing
Aminopyralid (a.e.)	Invasives	0.078	0.11	Backpack-directed foliar spray	Broadleaf species	Growth regulator (auxin mimic)	Post-emergent
Chlorsulfuron (a.i.)	Invasives	0.056	0.25	Backpack-directed foliar spray	Perennial broadleaf species and grasses	Inhibits amino acid synthesis	Pre-emergent, post-emergent
Glyphosate (a.e.)	Invasives, reforestation site prep and release	2.00	8.00	Backpack-directed foliar spray, hack and squirt, cut- stump, wicking	Non-selective	Inhibits amino acid synthesis	Post-emergent
Imazapyr (a.e.)	Invasives	0.45	1.25	Backpack-directed foliar spray, hack and squirt, cut- stump, stem injection, basal bark treatment	Broadleaf species, woody plants, annual and perennial grasses	Inhibits amino acid synthesis	Pre-emergent, post-emergent
Indaziflam (a.i.)	Reforestation site prep	0.065	0.091	Backpack-directed foliar spray	Broadleaf species, grasses, vines	Inhibits cellulose synthesis	Pre-emergent
Triclopyr (a.e.) amine	Reforestation release	1.00	6.00	Backpack-directed foliar spray, hack and squirt, cut- stump, basal bark treatment	Broadleaf species, woody plants	Growth regulator (auxin mimic)	Post-emergent
Clopyralid (a.e.)	Invasives	0.35	0.5	Backpack-directed foliar spray	Broadleaf species	Growth regulator (auxin mimic)	Post-emergent

²⁰ Future invasives treatments could potentially use any herbicide analyzed within this project.

E- 2: Target species and proposed herbicides for reforestation treatments

Scientific name	Common name	Proposed herbicides
<i>Arctostaphylos patula</i>	Greenleaf manzanita	Glyphosate, Indaziflam, Triclopyr
<i>Ceanothus cordulatus</i>	Whitethorn ceanothus	Glyphosate, Indaziflam, Triclopyr
<i>Ceanothus integerrimus</i>	Deerbrush	Glyphosate, Indaziflam, Triclopyr
<i>Ceanothus prostratus</i>	Mahala mat	Glyphosate, Indaziflam, Triclopyr
<i>Ceanothus velutinous</i>	Snowbrush	Glyphosate, Indaziflam, Triclopyr
<i>Chrysolepsis</i> spp.	Chinquapin	Glyphosate, Indaziflam, Triclopyr
<i>Ribes</i> spp.	Gooseberry	Glyphosate, Indaziflam, Triclopyr
<i>Symphoricarpos albus</i>	Snowberry	Glyphosate, Indaziflam, Triclopyr
<i>Prunus emarginata</i>	Bitter cherry	Glyphosate, Indaziflam, Triclopyr

E- 3: Target species and proposed herbicides for invasives treatments

Scientific name	Common name	Proposed herbicides
<i>Aegilops triuncialis</i>	Barbed goatgrass	Glyphosate, Indaziflam
<i>Ailanthus altissima</i>	Tree of heaven	Glyphosate, Imazapyr
<i>Bromus tectorum</i>	Cheatgrass	Glyphosate, Indaziflam
<i>Centaurea solstitialis</i>	Yellow starthistle	Aminopyralid, Glyphosate
<i>Centaurea stoebe</i> ssp. <i>micranthos</i>	Spotted knapweed	Aminopyralid, Glyphosate, Clopyralid
<i>Chondrilla juncea</i>	Skeletonweed	Aminopyralid
<i>Cirsium arvense</i>	Canada thistle	Aminopyralid, Clopyralid
<i>Cytisus scoparius</i>	Scotch broom	Glyphosate, Imazapyr
<i>Dittrichia graveolens</i>	Stinkwort	Aminopyralid, Clopyralid
<i>Elymus caput-medusae</i>	Medusahead	Aminopyralid, Glyphosate, Indaziflam
<i>Genista monspessulana</i>	French broom	Aminopyralid, Glyphosate, Imazapyr
<i>Isatis tinctoria</i>	Dyers woad	Chlorsulfuron, Glyphosate
<i>Lepidium latifolium</i>	Pepperweed	Chlorsulfuron, Imazapyr
<i>Linaria dalmatica</i>	Dalmatian toadflax	Chlorsulfuron, Glyphosate, Imazapyr
<i>Lythrum salicaria</i>	Purple loosestrife	Glyphosate, Imazapyr
<i>Onopordum acanthium</i>	Scotch thistle	Clopyralid
<i>Potentilla recta</i>	Sulfur cinquefoil	Aminopyralid, Glyphosate
<i>Rubus armeniacus</i>	Himalayan blackberry	Aminopyralid, Glyphosate, Indaziflam
<i>Spartium junceum</i>	Spanish broom	Glyphosate, Imazapyr

E- 4: Proposed Tank Mixtures

Tank Mixture	Proposed Use
Glyphosate (2-8 lb a.e./acre) + Triclopyr (1-6 lb a.e./acre)	Reforestation site prep, release
Glyphosate (2-8 lb a.e./acre) + Imazapyr (0.45-1.25 lb a.e./acre)	Reforestation site prep, release
Glyphosate (2-8 lb a.e./acre) + Indaziflam (0.065-0.091 lb a.i./acre)	Reforestation site prep, release
Glyphosate (2-8 lb a.e./acre) + Aminopyralid (0.078-0.11 lb a.e./acre)	Invasives
Glyphosate (2-8 lb a.e./acre) + Chlorsulfuron (0.056-0.25 lb a.i./acre)	Invasives
Glyphosate (2-8 lb a.e./acre) + Clopyralid (0.35-0.5 lb a.e./acre)	Invasives
Aminopyralid (0.078-0.11 lb a.e./acre) + Imazapyr (0.45-1.25 lb a.e./acre)	Invasives

Grazing Restrictions

Herbicides sprayed on plants are not generally toxic to livestock. Certain unpalatable or poisonous plants treated with certain herbicides may become palatable to livestock. Be certain that livestock are kept out of areas where poisonous plants have been sprayed until the plants have dried up. Attention must be given to grazing restrictions outlined on the label. The restrictions will prevent residues that could stop the meat from being marketed.

Most herbicides have grazing and feeding restrictions stated on the label that limit the use of the treated area for livestock feed. Grazing and harvesting an area for feed following herbicide use often is prohibited because research on residue levels is inadequate. The effect of the chemical or its breakdown products on livestock or retention in the animal's body may not be known. Livestock which consume feed in areas treated with such herbicides probably would not become ill from the chemicals but could retain the chemicals in their systems. The concern is that herbicides could be passed in the milk of lactating animals or cause abortion in pregnant animals. The chemical may also have potential to be retained by the animals and be present in the slaughtered carcass. Although these problems are not likely to occur, labeling restrictions are strict and should be adhered to. The presence of foreign chemicals in milk or meat of animals can result in confiscation and destruction of the products and loss of income from these animals.

Table E-5 presents grazing and feeding restrictions for herbicides proposed in this project. **The herbicide label is always the final authority on herbicide uses and precautions.**

E-5: Herbicide grazing restrictions

Herbicide	Application Rate	Application Rate	Lactating Dairy Animals Before Grazing	Lactating Dairy Animals Before Hay Harvest	Beef and Non-Lactating Dairy Animals Before Grazing	Beef and Non-Lactating Dairy Animals Before Hay Harvest	Removal Before Slaughter	Comments
Aminopyralid	3 -7 oz/acre (7 oz max per acre per year)	0.047 to 0.11 lb a.e./acre (0.11 lb a.e./acre max)	0	0	0	0	0	There are no restrictions on grazing or grass hay harvest following application at labeled rates.
Chlorsulfuron	1 and ⅓ oz/acre	0.056 to 0.25 lb a.i./acre	0	0	0	0	0	There are no grazing or hay restrictions for any livestock, including lactating animals, with application rates up to 1 and ⅓ ounces per acre. No enclosure is required for any animals.
Clopyralid	⅔ pint per acre per annual growing season	0.35 to 0.5 lb a.e./acre	N/A	N/A	N/A	N/A	N/A	Regulation of “Exported Grass Hay” from California.
Imazapyr	12 to 64 oz/acre	0.45 to 1.25 lb a.e./acre	N/A	N/A	N/A	N/A	N/A	
Indaziflam	3.5 to 6.5 oz/acre	0.065 to 0.091 lb a.i./acre	N/A	30 days	N/A	30 days	N/A	Do not cut hay within 30 days of a single application up to 0.04 lb a.i./acre.
Glyphosate (spot applications)	Labeled rate varies	2 to 8 lb a.e./acre	14 days	14 days	14 days	14 days	0	
Glyphosate (broadcast)	Labeled rate varies	2 to 8 lb a.e./acre	8 weeks	8 weeks	8 weeks	8 weeks	0	
Triclopyr	⅔ gal/acre	1 to 6 lb a.e./acre	0	14 days	0	14 days	3 days	Do not harvest hay for 14 days after application.

Appendix F: Design Features

Design features are integral components of the proposed action. As necessary during project implementation, design features may be modified (either more or less restrictive) upon consultation with an appropriate resource specialist and approved by a Line Officer.

Cultural Resources

F- 1: General Measures

ID	Description
CUL-1	A qualified Archaeologist will conduct pedestrian surveys of accessible portions of the project area that were not previously adequately surveyed consistent with the terms of the Heritage Implementation Plan (HIP). Cultural resources will be designated on the ground with flagging and/or by other effective protection measures prior to implementation of project activities. Buffer zones may be established to ensure added protection where a qualified Archaeologist determines that they are necessary. The use of buffer zones in conjunction with other avoidance measures are particularly applicable where setting contributes to the property's eligibility under 36 CFR 60.4, or where it may be an important attribute of some types of cultural resource sites (e.g., historic buildings or structures with associated historic landscapes, or traditional cultural properties important to Native Americans), or where heavy equipment is in used proximity to cultural sites. The size of buffer zones needs to be determined by a qualified Archaeologist on a case-by-case basis. Monitoring by a qualified Archaeologist may be used as a protection measure and/or to enhance other protection measures.
CUL-2	If heritage resources are inadvertently discovered during project implementation, the Forest or District Archaeologist would be contacted immediately. The heritage resources would be recorded, clearly delineated, and protected.
CUL-3	Vegetation to be burned shall not be piled within the boundaries of cultural sites unless locations (e.g., a previously disturbed area) have been specifically approved by qualified Plumas NF Heritage staff.
CUL-4	Manual treatments with directional felling methods may be used within site boundaries, working with a qualified Archeologist to protect cultural resources.
CUL-5	Mechanical treatments and skidding will be avoided within site boundaries and buffers. In specific instances, the Forest or District Archaeologist may approve the use of mechanical equipment to remove brush or woody material from within specifically identified areas within site boundaries under prescribed measures designed to prevent or minimize effects. Vegetative or other protective padding may be used in conjunction with the Forest or District Archaeologist authorization of certain equipment types within site boundaries. Any approved use of mechanical equipment within a site or buffer shall be approved and monitored by a qualified Archaeologist.

ID	Description
CUL-6	Notify an appropriate Tribal Historic Preservation Officer, or tribal representative of new discoveries that would be relevant to Tribes.
CUL-7	An on-site cultural monitor will be present during treatment within units with identified sensitive cultural resources.

F- 2: Standard Protection Measures established in the Heritage Implementation Plan (HIP) developed under the National Programmatic Agreement for Phasing of Section 106 of the National Historic Preservation Act

ID	Description
CUL-8	Linear sites (e.g., historic trails, roads, railroad grades, ditches) may be crossed or breached by equipment in areas where their features or characteristics clearly lack historic integrity (i.e., where those portions do not contribute to site eligibility or values). (1) Crossings are not to be made at the points of origin, intersection, or terminus of linear site features. (2) Crossings are to be made perpendicular to linear site features. (3) The number of crossings is to be minimized by project and amongst multiple projects in the same general location. (4) The remainder of the linear site is to be avoided, and traffic is to be clearly routed through designated crossings.
CUL-9	Accumulation of sufficient snow over archaeological deposits or historic features to prevent surface and subsurface impacts as determined by the Forest or District Archaeologist. Undertaking activities may be implemented over snow cover on historic properties under the following conditions: (a) The cover must have at least 12 inches depth of compacted snow or ice throughout the duration of undertaking activities on sites. (b) All concentrated work areas (e.g., landings, skid trails, turnarounds, and processing equipment sites) shall be located prior to snow accumulation and outside historic property boundaries.
CUL-10	Placement of foreign, non-archaeological material (e.g., padding or filter cloth) within transportation corridors (e.g., designated roads or trails, campground loops, boat ramps, etc.) over archaeological deposits or historic features to prevent surface and subsurface impacts caused by vehicles or equipment. Such foreign material may be utilized on historic properties under the following conditions: (1) Engineering will design the foreign material depth to acceptable professional standards. (2) Engineering will design the foreign material use to assure that there will be no surface or subsurface impacts to archaeological deposits or historic features. (3) The foreign material must be easily distinguished from underlying archaeological deposits or historic features.

ID	Description
	(4) The remainder of the archaeological site or historic feature is to be avoided, and traffic is to be clearly routed across the foreign fill material. (5) The foreign material must be removable should research or other heritage need require access to the archaeological deposit or historic feature later; and (6) Native American tribe or other public concerns about the use of the foreign material will be addressed prior to use.
CUL-11	Felling and removal of hazard, salvage, and other trees within historic properties under the following conditions: (1) Trees may be limbed or topped to prevent soil gouging during felling. (2) Felled trees may be removed using only the following techniques: hand bucking, including use of chain saws, and hand carrying, rubber-tired loader, crane/self-loader, helicopter, or other non-disturbing Forest or District Archaeologist approved methods. (3) Equipment operators shall be briefed on the need to reduce ground disturbances (e.g., minimizing turns). (4) Where monitoring is a condition of approval, its requirements or scheduling procedures should be included in the written approval.
CUL-12	For fire, and hazardous fuels and vegetation management projects, the Forest or District Archaeologist, in conjunction with fuels, vegetation management, or fire specialists as necessary, shall develop treatment measures for at risk historic properties (as defined in SHPO approved Region 5 modules and agreements as well as the HIP) designed to eliminate or reduce potential adverse effects to the extent practicable by utilizing methods that minimize surface disturbance, and/or by planning project activities in previously disturbed areas, or areas lacking cultural features. The following standard protection measures apply to fire, hazardous fuels, and vegetation management projects: (1) Mechanically treated (crushed/cut) brush or downed woody material may be removed from historic properties by hand, through the use of off-site equipment, or by rubber-tired equipment approved by the Forest or District Archaeologist. Ground disturbance shall be minimized to the extent practicable during such removals. (2) Woody material may be chipped within the boundaries of historic properties so long as the staging of chipping equipment on-site does not affect historic properties and staging areas are specifically approved by the Forest or District Archaeologist. (3) Forest or District Archaeologist may approve the use of tracked equipment to remove brush or woody material from within specifically identified areas of site boundaries under prescribed measures designed to prevent or minimize effects.

ID	Description
	Vegetative or other protective padding may be used in conjunction with certain equipment types within site boundaries.
CUL-13	Routine maintenance of roads or trails over 50 years old may be approved by the Forest or District Archeologist in order to maintain current uses provided work is confined to the existing alignment/prism and previously maintained surfaces, and proposed work or methods are unlikely to affect historic integrity (e.g. brush clearing, cleaning culverts, maintaining ditches and erosion control features, etc.)

Biological Resources

F- 3: Federally Listed and General Amphibians

ID	Description
AMPHIB-1	Listed Amphibian Surveys Foothill yellow-legged frog and Sierra Nevada yellow-legged frog habitat occupancy will be assessed by the Forest Service or other qualified and FS approved Biologist within suitable habitat adjacent to proposed treatment areas. Occupancy will be determined through surveys by qualified biologists. The qualified biologist will have documented training in the biology and field identification of frogs in addition to demonstrable experience surveying for and positively identifying Sierra Nevada yellow-legged frogs and/or foothill yellow-legged frogs. The survey will cover all suitable habitat areas and should any life stages of the species be found (i.e., the site is occupied), work activities for that area will occur outside the limited operating period and applicable buffers mandated by the Forest Service conservation measures. Three surveys will occur prior to implementation of proposed treatments within suitable habitat.
AMPHIB-2	Listed Amphibian Avoidance If any foothill yellow-legged frogs or Sierra Nevada yellow-legged frogs are found at any time during implementation of the proposed project, operations will cease in the vicinity of the frog. The immediate area around the frog will be vacated and the frog will be left alone. No activity will occur in that area until such time as the frog has left the area on its own. Foothill yellow-legged frogs and Sierra Nevada yellow-legged frogs will not be handled. The occurrence will be reported as soon as possible to the Forest Service District Biologist and coordination with USFWS will be initiated.
AMPHIB -3	<u>Suitable habitat</u> - Herbicide and other chemical treatments would not occur within 107-feet of the stream or within suitable Sierra Nevada yellow-legged frog or foothill yellow-legged frog habitat. <u>Occupied habitat</u> - Herbicide application within 500-feet of occupied FYLF or SNYLF habitat will require Forest Service or other qualified and FS approved biologist to be present to ensure no adverse impacts.

ID	Description
AMPHIB-4	Comply with all applicable standards and guidelines and BMPs listed as Conservation Measures in the USFWS Programmatic Biological Opinion (PBO) on Nine Forest Programs on Nine National Forests in the Sierra Nevada of California for the Endangered Sierra Nevada Yellow-Legged Frog, Endangered Northern Distinct Population Segment of the Mountain Yellow-Legged Frog, Threatened Yosemite Toad, and Threatened North Feather Distinct Population Segment and Endangered South Sierra Distinct Population Segment of the Foothill Yellow-Legged Frog (USFWS 2023). Applicable standards, guidelines, and BMPs include general measures; measures for timber harvest, vegetation management, and watershed restoration projects; and measures for road and trail maintenance programs.
AMPHIB-5	Occupied habitat, or suitable habitat with no surveys, or suitable habitat greater than 35% slope: No heavy equipment allowed within 82-feet of perennial or intermittent streams that have suitable habitat for frogs unless surveys conducted prior to equipment use confirms that listed amphibians are not present. Heavy equipment includes road decommission equipment and skid steer. This does not apply to project activities on existing roads and stream crossings. Suitable but unoccupied habitat less than 35% slope: No heavy equipment allowed within 25-feet of perennial or intermittent streams or other aquatic feature. This does not apply to project activities related to instream channel work. Chainsaw thinning allowed within the inner RCA, but no piling of material within 82-feet of perennial or intermittent streams (to prevent risk of burning frogs that choose to hibernate in piles). Where surveys are complete and suitable habitat was determined to be unoccupied by listed amphibians, the pile-exclusion buffer may be reduced to 25 feet.
AMPHIB-6	No active ignitions within 82 feet of perennial or intermittent streams. Where surveys are complete and suitable habitat was determined to be unoccupied by listed amphibians, the active ignition-exclusion buffer may be reduced to 25-feet. Pile burning will be in directional light, which means that the fire must start at one point only and let fire burn through to allow any wildlife species within the pile to escape. Piles for wildlife retention inside of the 82-foot riparian buffer could be built with wildlife pile prescriptions and will not be burned to provide for Sierra Nevada yellow-legged frog shelter habitat.
AMPHIB-7	Follow all Herbicide Use (HU) design features to avoid potential adverse impacts to listed amphibians and their habitats.
AMPHIB-8	Construction activities for in stream channel work, construction or repair of crossings, and road work near streams would occur during the dry time of the year when stream flow is at its lowest, and reproductive cycles for most aquatic species have reached the dispersal stage, from mid-August to mid-November.
AMPHIB-9	To protect water quality and riparian habitat for aquatic organisms, all temporarily impacted riparian and meadow areas will be mulched and/or re-vegetated to minimize erosion and reestablish native vegetation. Only native plant species will be used in revegetation. Weed free rice straw and/or native grass seed shall be used

ID	Description
	for erosion control or other purposes within yellow-legged frog habitat, regardless of occupancy, to ensure that individual frogs do not get trapped, injured or killed. Plastic mono-filament netting or similar material will not be used anywhere on the project because amphibians may become entangled or trapped in it.

F- 4: Gray Wolf

ID	Description
WOLF-1	To determine whether gray wolves have been documented in or in the vicinity of a treatment area, Plumas National Forest (PNF) will contact CDFW before implementation of project activities to obtain general information about documented gray wolf activity within the vicinity and the need for protection measures. A limited operating period (LOP) restricting all noise above ambient levels or smoke generating activities would be instated from April 1 through July 15 within one mile of an active den site. Further discussions and coordination with CDFW and the USFWS may result in modified distances or extended dates for this specific conservation measure. In addition, if the den or rendezvous sites are clearly separated from project-generated disturbances by topographic features or terrain, seasonal restrictions may be adjusted or eliminated, as approved by the USFWS. These conservation measures would avoid or minimize disturbance at active den or rendezvous sites that could disrupt reproductive success or result in adverse effects. Dens that are known to be used in consecutive years but not used in the current year may require a LOP if CDFW or the USFWS determines it is necessary. Early rendezvous sites are typically close to dens: implementing a LOP within 1 mile of active den sites will generally mitigate effects to early rendezvous sites when pups are still vulnerable. Coordination with CDFW and the USFWS prior to implementation would be done to ensure protection of all known and/or newly discovered den and rendezvous sites. If a den is discovered during implementation of the proposed project, the LOP shall be implemented and coordination with CDFW and the USFWS shall be pursued.

F- 5: USDA Forest Service Sensitive Raptor Species (CSO and AGOS)

ID	Description
CSO/AGOS-1	Limited Operating Periods Within Protected Activity Centers (PACs) and if California spotted owl (CSO) or American goshawk (AGOS) nests are found or suspected, limited operating periods (LOPs) will be implemented following 2004 SNFPA and 2024 USFWS guidelines: • CSO: March 1–July 9 for noise and smoke disturbance; March 1– August 31 for habitat manipulation/vegetation treatments • AGOS: February 15–September 15

ID	Description
	If PACs are determined to be unoccupied during the season of planned implementation, the LOP may be removed by the Forest Service District Wildlife Biologist. In coordination with USFWS during consultation, CSO LOPs outside of an active nest stand may be modified in size or timing. A biological analysis conducted by the Forest or District Biologist and associated rationale that concludes that a project may still minimize or avoid breeding disturbance or failure must be provided in the Project Documentation Form during the consultation process. The biological analysis should consider the intensity, duration, timing, specific location of the activity, and other relevant factors such as topography and vegetation that buffers sound levels. In an active nest stand, the full CSO LOPs (March 1–July 9 for noise and smoke disturbance; March 1– August 31 for habitat manipulation) must be implemented. These limited operating periods may be discontinued in a given year if protocol-level surveys for determining reproductive status confirm owls are not nesting or fledglings have dispersed in that calendar year.
CSO/AGOS-2	Spotted Owl and American Goshawk Surveys Conduct pre-treatment surveys for spotted owls and American goshawks in suitable forest habitat following USFS and USFWS-approved survey methods. If surveys are not conducted or do not follow approved methods, assume owls are present in suitable nesting/roosting and foraging habitat (i.e., 4M, 4D, 5M, and 5D stands). Designate activity centers and PACs where appropriate based on survey results, following applicable Forest Plan direction.
CSO/AGOS-3	Mechanical Treatment Buffer Mechanical treatments will not be conducted within 372 feet of a known spotted owl or 500 feet of an American goshawk nest, regardless of current occupancy.
CSO/AGOS-4	Spotted Owl or American Goshawk PAC Establishment If an active spotted owl or American goshawk nest is detected during pre-treatment surveys outside of an established PAC, then existing PAC boundaries will be adjusted to include the nest, or a new PAC will be designated as appropriate.
CSO/AGOS-5	Avoid constructing staging areas or landings within Ca. spotted owl or American goshawk PACs. If placement of landings in PACs is unavoidable, use existing landings or other openings for equipment staging to the greatest extent possible. If new staging areas or landings must be created, canopy gaps must be less than 0.25 acre.
CSO/AGOS-6	Follow all applicable standards and guidelines set forth in the Sierra Nevada Forest Plan Amendment, as amended by the project-specific forest plan amendments

ID	Description
	regarding treatments where spotted owl and/or American goshawk occupied habitat and/or PACs overlap with WUI defense or WUI threat zones (STD-PAC-01).
CSO/AGOS-7	Where fire management features overlap with spotted owl or American goshawk PACs, fuel break treatments will be designed to retain existing habitat types (i.e., nesting/roosting, foraging), structure, and function. • Maintain a minimum of 60 percent canopy cover in 5D stands. • Maintain a minimum of 40 percent canopy cover in 4M, 4D, and 5M stands. • Maintain a minimum of 50 percent canopy cover, averaged at the PAC scale. Where fire management features overlap with spotted owl territories, fuel break treatments will be designed as follows: • If the territory contains less than 40% suitable habitat pre-treatment, retain all suitable habitat. • If the territory contains more than 40% suitable habitat pre-treatment, retain all suitable nesting/roosting habitat (CWHR classes 5M and 5D), while retaining at least 40% of the total suitable habitat in the territory.
CSO/AGOS-8	To support current and future owl life history activities, retain enough large, old trees and snags. • Maintain and promote large, old, and structurally complex trees and snags throughout the landscape to provide and promote quality owl nesting and roosting habitat (i.e., containing decadent structures or attributes that require decades to develop). • Maintain the largest/tallest trees (generally greater than 150 feet tall and/or 30 inches dbh), especially where biophysical conditions are likely to be sustainable to support both high canopy cover and large/tall trees in the future. To maintain habitat for prey populations and promote ecological processes, manage forest stands for coarse woody debris. To support current and future nesting sites, retain enough live trees more than 30 inches dbh in occupied PACs, territories, and throughout the landscape. • For mechanical thinning treatments within American goshawk PACs, California spotted owl PACs, California spotted owl HRCAs, and mature forest habitat (CWHR types 4M, 4D, 5M, 5D, and 6) within CSO territories, retain all live conifers 30 inches DBH or larger. Exceptions are allowed to meet needs for equipment operability.
CSO-9	Foster development of nesting/roosting habitat and habitat connectivity at the watershed and PAC scale: • To develop future nesting sites, retain clumps or groups of the largest/tallest trees (generally greater than 150 feet tall and/or 30 inches dbh) with high canopy cover (generally greater than 70 percent).

ID	Description
	• To promote habitat connectivity at the watershed scale, retain connected areas of moderate (generally at least 40 percent) and high (generally at least 60 percent) canopy cover with the largest/tallest trees (generally greater than 150 feet tall and/or 30 inches dbh). • Design mechanical treatments in 5M and 5D stands within California spotted owl Home Range Areas (outside PACs, Territories, and HRCAs) to retain a minimum of 40 percent canopy cover averaged within the treatment unit while reducing the rSDI as close to the target range (25 to 35 percent of maximum) as feasible. Increase resiliency to natural disturbances (e.g., large-scale wildfire; tree mortality due to drought, insects, and disease) at the watershed scale by reducing tree density of smaller trees that are competing with larger trees. Thinning treatments should be designed to minimize the loss of and to recruit large and very large trees and snags (e.g., generally at least 24 inches dbh for large trees and at least 45 inches dbh for very large snags).
CSO-10	When treating within PACs, retain existing habitat types (i.e., nesting/roosting, foraging) and habitat function. Habitat may be maintained/improved. Do not downgrade or remove existing habitat of any type: • Avoid mechanical treatments within a 10-acre (372 foot radius buffer) nest stand surrounding the most recent known nest tree or nest structure. • Retain historic and recent known owl nest trees or known nest structures. • Maintain or increase the quadratic mean diameter for the PAC as a whole. • Maintain a minimum of 50 percent canopy cover, averaged at the PAC scale. • Use existing landings or other openings for equipment staging to the greatest extent possible. If new staging areas must be created, canopy gaps must be less than 0.25 acre. • Prescribed fire and hand treatments are acceptable within a nest stand outside of the Limited Operating Period. To maintain habitat function and to avoid loss or damage to known nest trees, include mitigation measures when conducting prescribed fire in PACs (e.g., prepare burn units by initially reducing fuel loads with hand treatments, raking around nest trees, putting lines around nest trees).
CSO-11	For mechanical thinning treatments in mature forest habitat (CWHR types 4M, 4D, 5M, 5D, and 6) within California spotted owl HRCAs outside WUI Defense Zones: • Design projects to retain at least 40 percent of the existing basal area. The retained basal area should generally be comprised of the largest trees. • Where available, design projects to retain 5 percent or more of the total treatment area in lower layers composed of trees 6 to 24 inches dbh within the treatment unit.

ID	Description
	• Design projects to avoid reducing pre-existing canopy cover by more than 30 percent within the treatment unit. Percent is measured in absolute terms (for example, canopy cover at 80 percent should not be reduced below 50 percent.) • Within treatment units, at a minimum, the intent is to provide for an effective fuels treatment. Where existing vegetative conditions are at or near 40 percent canopy cover, design projects to remove the material necessary to meet fire and fuels objectives. • Where existing vegetative conditions permit, design projects to retain at least 50 percent canopy cover averaged within the treatment unit. Exceptions are allowed in limited situations where additional trees must be removed to adequately reduce ladder fuels, provide sufficient spacing for equipment operations, or minimize re-entry. Where 50 percent canopy cover retention cannot be met for reasons described above, retain at least 40 percent canopy cover averaged within the treatment unit.

F- 6: Other Wildlife

ID	Description
WLDF-1	In addition to applicable standards, guidelines, and BMPs for trail construction, if sensitive wildlife species are identified along proposed trail routes during pre-implementation surveys, trails will be re-routed to avoid potential impacts to these species.
WLDF-2	Incidental detections of federally listed and sensitive species prior to or during project implementation will be reported to the Forest or District Wildlife Biologist for protection in accordance with management direction for PNF.
WLDF-3	US Forest Service Sensitive Birds The following Limited Operating periods will be implemented to prevent breeding disturbance or abandonment of the nest: • Bald Eagle: Jan 1 – Aug 31 within ¼ mile of nest • Golden Eagle: Jan 1 – Aug 31 within 1 mile of nest • Greater Sandhill Cranes: April 1 – August 1, up to ½ mile depending on size of meadow (consult with FS District Wildlife Biologist) • Osprey: Mar 15 – Aug 15 within 1/8 mile of nest • Peregrine Falcon: Feb 1 – Aug 31 within ¼ mile of nest • Willow flycatcher: May 1 – Jul 31 within occupied habitat and 1/8-mile buffer of occupied habitat.
WLDF-4	US Forest Service Sensitive Mammals If active pallid bat, fringed myotis, or Townsend's big-eared bat roosts are detected, then a limited operating period during the bat maternity season (i.e., from April 1 through August 31) will be implemented within 1/8 mile of the roost.

ID	Description
	Carnivore den sites (700-acres for Pacific Fisher and 100-acres for American Marten) will be designated to protect highest quality habitat surrounding the den sites. A limited operating period will be implemented within a 700-acre buffer for all known fisher den sites during the maternity season (i.e., from March 1 through June 30) to prevent disturbance or abandonment of the den. A limited operating period will be implemented within a 100-acre buffer for all known marten den sites during the maternity season (i.e., from May 1 through July 31) to prevent disturbance or abandonment of the den.
WLDF-5	Avoid fuel treatments in fisher den site buffers to the extent possible. If areas within den site buffers must be treated to achieve fuels objectives for the urban wildland interface zone, limit treatments to mechanical clearing of fuels. Treat ladder and surface fuels to achieve fuels objectives. Use piling or mastication to treat surface fuels during initial treatment. Burning of piled debris is allowed. Prescribed fire may be used to treat fuels if no other reasonable alternative exists.
WLDF-6	During the development of and prior to finalization of implementation plans and contracts the applicable PNF District Wildlife Biologist will be contacted to review and update locations of species, limited operating periods, site buffers, exclusion areas, and other information relevant to project design features to ensure accuracy and incorporation of pre-implementation survey results.
WLDF-7	Exceptions to conifer removal would include circumstances such as retaining trees with signs of wildlife habitation or desirable wildlife habitat characteristics, as well as trees displaying legacy characteristics. Legacy and wildlife habitat trees would be designated for retention by the district silviculturist, district biologist, or their designated personnel.

F- 7: Botanical Resources

ID	Description
BOTANY-1	PNF will follow the direction in Forest Service Handbook (FSH) 2609.26 Chapter 11 and FSM 2670.22, 2670.32, and 2900 on whether to conduct surveys and the appropriate type of survey documentation. Any habitat potentially suitable for federally listed or proposed threatened or endangered species and USDA Forest Service sensitive plant, lichen, and fungi species will be surveyed early enough in project planning process that the project can be designed to conserve or enhance threatened, endangered, proposed, and sensitive (TEPS) plants and their habitats. Known locations of special-status plants in moderate to high severity burn areas will be revisited to assess current extent and condition before implementation of project activities.
BOTANY-2	Populations of special-status plant species will be avoided, as per Interim Management Prescriptions, on a site-by-site basis. Ground-disturbing activities, including off-road equipment, burn piles, and chipping and spreading slash materials will be prohibited within controlled areas. Hand felling of trees and skidding of logs may be conducted within special-status plant occurrence areas if it is determined by a PNF Botanist or their designee, that effects would be minimal or

ID	Description
	that there will be beneficial effects on the site or habitat conditions. For large, flagged areas (i.e., greater than 10 acres) with variable special-status plant density, plants may be flagged for avoidance so that necessary fuels reduction can continue within population boundaries if approved by a PNF Botanist or their designee. The PNF Botanist can evaluate proposed activities on a site-by-site basis considering species abundance, population size, geographic distribution, and known species ecology. Burn piles may be allowed by the PNF Botanist, staged at least 20 feet away from plants to ensure that radiant heat will not adversely affect individuals or the surrounding duff layer.
BOTANY-3	If treatments need to occur within special-status plant avoidance areas, trees may be felled manually but must be left on site to avoid ground disturbance unless removal can occur with minimal effects, at the discretion of a PNF Botanist or their designee. Flagging may be used to further delineate avoidance areas or individual plants. This requirement may be waived by a PNF Botanist or their designee depending on the species present and its phenology (e.g., annuals that have already set seed, species that are old growth and shade-dependent) which will be considered when planning treatments.
BOTANY-4	In the event any new populations of special-status species are discovered during the various phases of the project, the area will be flagged and avoided until a PNF Botanist, or their designee determines otherwise. Adherence to Plumas National Forest Interim Management Prescriptions for Threatened, Endangered, Sensitive and Special Interest Plants (Interim Management Prescriptions) is required.
BOTANY-5	For treatments adjacent to populations of special-status plant species, trees will be directionally felled away from the controlled area to avoid disturbing the population. Directionally felled trees will be removed only if a PNF Botanist or their designee determines that ground disturbance within the controlled area can be avoided. If directional felling cannot be done due to safety concerns, trees will be felled as necessary and left on site (BOTANY-3).
BOTANY-6	PNF will consult with a PNF Botanist prior to implementation of work within designated and proposed botanical Special Interest Areas (SIAs) (i.e., Butterfly Valley Botanical Area, Fales Basin, Mount Pleasant, Mud Lake, Red Hill, Soda Rock). Treatments will be designed to maintain the integrity and suitability of these areas for which they were proposed. New permanent fuel breaks will not occur in SIAs.
BOTANY-7	Serpentine soil communities, and other bedrock outcrops will be protected from motorized equipment and off-road vehicles. Landings, skid trails, piling, burning, mastication, and chip spread will not occur in these communities unless a PNF Botanist is consulted. Manual felling may occur, but trees will be left in place unless they can be removed with full suspension techniques. Road maintenance will be limited on roads that cross serpentine soils and bedrock avoiding special-status plant habitat.
BOTANY-8	In cases of emergency or where hazard tree removal is necessary, trees within Botany control areas, trees may be directionally felled away from the control area

ID	Description
	and left on the ground. If remaining fuel build up is not acceptable, full suspension removal of fuel material or reaching in with equipment will be preferred. If this is not possible, a PNF Botanist will determine specific treatments within botany control areas in accordance with the Interim Management Prescriptions.
BOTANY-9	Application of magnesium chloride for dust abatement will not occur within 100 feet of roadside occurrences of special-status plants or Special Interest Areas.
BOTANY-10	Borate (fungicide) will not be applied within 25 feet of the known veined water lichen (<i>Peltigera gowardii</i>) occurrences or other special-status fungi and lichen species identified during pre-implementation special-status plant surveys. Fungicide application in special-status occurrences will be conducted at the discretion of and under the supervision of a PNF botanist or their designee. Spills within special-status occurrence areas or within RCAs containing occurrences of veined water lichen will be immediately reported to the PNF Botanist.
BOTANY-11	Watch list plant species encountered during surveys for special-status species will be mapped. Protection measures will be developed by a PNF Botanist on a case-by-case basis, according to the Interim Management Prescriptions. Protection measures will depend on many factors including local abundance, species-specific ecology and tolerance to disturbance etc., and what the proposed activity for the specific area.
BOTANY-12	Allow for the opportunity to evaluate the effect of prescribed fire on special-status plant populations in accordance with the Interim Management Prescriptions. Allow PNF Botanist to coordinate pre- and post-monitoring surveys where feasible. Species of interest may include milk vetch (<i>Astragalus</i> spp.), <i>Botrychium</i> spp., clustered lady's slipper (<i>Cypripedium fasciculatum</i>), mountain lady's slipper (<i>Cypripedium montanum</i>), Baker's cypress (<i>Hesperocyparis bakeri</i>), and closed throated beardtongue (<i>Penstemon personatus</i>).
BOTANY-13	Allow for the opportunity to maintain and manage areas of culturally significant plant populations for gathering purposes using Traditional Ecological Knowledge. Culturally significant plants may include Beargrass (<i>Xerophyllum tenax</i>), Elderberry (<i>Sambucus</i> sp.), Redbud (<i>Cercis occidentalis</i>), and Willow (<i>Salix</i> sp.). Designated gathering grounds will be avoided for mechanical and chemical treatments.
INVASIVE-1	Invasive plant surveys will be conducted prior to project implementation unless recent protocol-level surveys (i.e., within 5 years) have been conducted. High-severity burn areas that have never been surveyed post-fire will be surveyed prior to project implementation, even if protocol-level surveys have been conducted within 5 years. Treatment of PNF Priority Species (see Invasive Weed Risk Assessment) will be conducted to reduce the risk of invasive plant spread prior to project implementation where feasible using an integrated pest management approach following applicable regulations and label instructions. Otherwise, known invasive plant sites will be flagged prior to implementation and will be avoided. Weeds may be treated within and adjacent to special-status plant flagged areas, and individual plants will be targeted by hand to reduce herbicide drift. Drift

ID	Description
	will be limited (e.g., coarse droplet size, wind restrictions, low nozzle height), and a 50-foot exclusion zone will be implemented around flagged areas. This buffer may be reduced if the special-status plants are covered/shielded during spraying.
INVASIVE-2	If project activities cannot be completely avoided within flagged weed infestations, risk minimization strategies will be employed, such as working in the infested area last, working in the infested areas when propagules are not viable, and limiting the number of people or equipment within the infestation. If work is done within known infested area, off road equipment must be washed prior to leaving the area.
INVASIVE-3	Off-road equipment (USDA Forest Service and contracted) will be cleaned to ensure it is free of soil, seeds, vegetative matter, or other debris before entering National Forest System lands to prevent the introduction or spread of invasive plants. Use agreements will include clauses to require contractors to meet USDA Forest Service-approved vehicle and equipment cleaning requirements/standards. Equipment will be inspected by a designated examiner before initial entry and any subsequent re-entries onto the project area. If determined necessary during the inspection, cleaning will occur at a vehicle washing station or agreed upon cleaning location before the equipment enters or re-enters the project area.
INVASIVE-4	Keep hand piles out of weed infestation sites. Burn piles should be kept as small as reasonably possible to avoid soil compaction, sterilization, and noxious weed establishment.
INVASIVE-5	If skid trails, landings, or stream crossings require soil stabilization, weed-free equipment, mulches, and seed sources will be used. On-site material will be chipped to use as mulch to the extent possible. If mulch is imported to the site, use weed free rice straw (preferred) or certified weed free straw. Avoid seeding in areas where revegetation will occur naturally unless noxious weeds are a concern. Save topsoil from disturbance and put it back to use in onsite revegetation, unless contaminated with noxious weeds. All activities that require seeding or planting will use locally collected native seed sources as determined by the PNF Botanist. A seed mix will be developed when specific site locations and conditions (e.g., dry, moist, wet) are determined.
INVASIVE-6	Project areas at high risk for invasive plant infestation and/or spread will be monitored post-project. If found, newly detected or expanding PNF Priority invasive species will be treated in accordance with approved integrated pest management treatments.

Hydrology, Soil, and Aquatic Resources

F- 8: Riparian Conservation Areas

ID	Description
HYD-1	Mechanical equipment is permitted within designated Riparian Conservation Areas (RCAs) but cannot enter the mechanical equipment exclusion zones (EEZs) for the

ID	Description
	purpose of removing material (See Riparian Conservation and Operating and Equipment Specifications).
HYD-2	Mechanical equipment will be allowed to reach into EEZs with the extendable boom arm without disturbing the ground for the purpose of removing material.
HYD-3	Within RCAs, one-end suspension will be used to remove felled timber, where feasible. If one-end suspension is not feasible, end-lining is permitted. Excessive soil displacement (i.e., 'furrowing') caused by end-lining will be mitigated or repaired following removal.
HYD-4	To minimize soil displacement, equipment is not allowed to turn around off a skid trail in an RCA. No new benched or sidehill skids are allowed in RCA. No operations over 35% unless there is a flatter area to dissipate water flow and trap sediment before it reaches a watercourse or lake (Forest Practice rules). Some exceptions may be allowed in WUI defense areas upon consultation with hydrologist/soil scientist or biologist prior to implementation.
HYD-5	Mechanical equipment will be allowed to enter EEZs for the purpose of crossing streams. FS approved Hydrologist/Soil Scientist or FS approved Biologist will work with sale administration to approve stream crossings and need for potential rehabilitation.
HYD-5A	In general, hand cutting and removal of material within the RCA would be permitted. However, hand cutting in areas where water is present as well as cutting of riparian vegetation would not be allowed unless approved FS approved Hydrologist/Soil Scientist prior to implementation.

F- 9: General Measures

ID	Description
HYD-6	Project implementation will adhere to best management practices (BMPs) in the National Core BMP Technical Guide.
HYD-7	Riparian species (aspen, cottonwood, alder, willow, dogwood, etc.) will not be cut or removed unless needed for operations and/or safety.
HYD-8	Trees that provide bank stability or contribute to channel integrity will not be felled unless they pose a safety risk, in which case they will be felled and left in place.
HYD-9	Determine retention levels of large down woody material on an individual site basis. Within westside vegetation types, aim to retain an average within the treatment unit of 10-15 tons of large wood per acre, when consistent with surface fuel objectives. Within eastside vegetation types, aim to retain an average of at least three large down logs per acre when consistent with surface fuel objectives.
HYD-10	Install and maintain suitable stormwater and erosion control measures such as hay wattles and/or other material to stabilize disturbed areas and waterways before seasonal shutdown of project operations or when severe or successive storms are expected.

ID	Description
HYD-11	Identify locations for equipment refueling and servicing and chemical storage sites and develop a Spill Prevention and Response Plan for these sites.

F- 10: Timber Harvest, Vegetation Management, and Fuels Management

ID	Description
HYD-12	Ground cover will be maintained at, or above, the minimum effective amount within treated units. Minimum effective ground cover range is between 50 and 70 percent, depending on erosion hazard rating.
HYD-13	Mechanical operations will be allowed to occur when the soils are dry to a depth of 8 inches, when the ground is frozen to a depth of 5 inches, uncompacted snow depth is at least 18 inches or compacted snow depth is 8 inches. For urgent operations within WUI Defense zones, exceptions may be approved by the NEPA authorizing official based upon recommendations from FS hydrologist or soil scientist. Soils are considered dry when soil moisture in the upper 8 inches is not sufficient to allow a soil sample to be squeezed and hold its shape or will crumble when the hand is tapped. Operations on sandy soil types may be considered once the top 5 inches are dry assuming that access routes can support equipment mobilization and vehicle traffic without causing excessive damage to the road system.
HYD-14	No piling of material or active ignition for burning will occur within 25 feet of perennial, intermittent and special aquatic features; larger buffers will be applied as appropriate based on slope or presence of special status amphibians as indicated in Table A-1 Riparian Conservation Area Operating and Equipment Specifications (below) and design element AMPHIB-1. Where feasible, burn piles will be burned prior to commencement of underburning activities.
HYD-15	For treatments within meadows, boles greater than 10 inches DBH will be felled and left within the meadow as large down woody debris, provided that appropriate ground fuel loadings are not exceeded. Where fuel loading exceeds appropriate levels; material within the EEZ may be removed by hand, and material outside of the EEZ may be removed by mechanized equipment.
HYD-16	Burn piles are allowed in meadows outside of RCA EEZs but can be no greater than 10 feet wide by 10 feet high. Additionally, material in piles in meadows will be no greater than 10 inches in diameter and piles will cover no more than 30 percent per acre in the treated meadow.
HYD-16A	To accomplish machine piling, excavator type equipment with a rotating arm will be used to grab slash from above. Machine piling with bulldozers will generally be avoided.
HYD-17	Generally, in the project area, mechanical operations are allowed to operate on steep slopes if skid trail, ground cover, and RCA restrictions are followed. In the WUI defense zone, operations will minimize turning and no side hilling of equipment will be allowed. Wherever possible, equipment will operate on a bed of slash and

ID	Description
	soils. Consultation with district hydrologists and soil scientists will take place when thinning on slopes greater than 35% to mitigate sedimentation and erosion. Geophysical properties considered: 1) high or very high Erosion Hazard Rating; 2) slopes greater than 65%; 3) features that indicate area has shallow-seated landslides or deep-seated landslide.; 4) features indicating a connected headwall swale is present.

F- 11: Landings, Temporary Roads, Skid Trails

ID	Description
HYD-18	When available, existing landings, temporary roads, and skid trails will be used.
HYD-19	No landings and temporary roads are allowed within meadows. If skid trails are necessary in a meadow ecosystem because there are no other alternatives to implement operations, they will be limited and placed in areas designated by a qualified specialist. After implementation, skid trails in meadows will be evaluated by a FS Hydrologist/Soil Scientist for detrimental compaction and soil disturbance. Locations that need repair will be remediated with an appropriate technique(s) such as subsoiling, scarification, spreading of native seed, and/or mulching with woody debris or certified weed-free straw.
HYD-20	Landing construction will not exceed 20 percent of an RCA's stream reach and/or SAF including other disturbances.
HYD-21	Landings within RCAs will be obliterated following project implementation, and a qualified specialist will evaluate them for compaction or erosion potential. Additional treatment may be recommended such as subsoiling, scarification, spreading of native seed, and/or mulching with woody debris or certified weed-free straw.
HYD-22	Skid trails will be perpendicular to the stream course within 50 feet of the stream and spacing of skids will generally be no closer than 100 feet center to center, when trails are parallel.
HYD-23	On slopes over 50%, equipment moving logs must operate on a bed of slash 18 inches deep. Some exceptions may be allowed in WUI defense areas upon approval of the NEPA authorizing official, based upon recommendations from FS Hydrologist/Soil Scientist.
HYD-24	No more than 15 percent of the unit should be dedicated to landings, permanent skid trails and temporary roads.
HYD-25	Unless otherwise agreed upon by hydrologist/soil scientist and sale administrator, landings, skid trail approaches to landings (to a distance of 200 feet), temporary roads and non-system access roads will be subsoiled and recontoured. Skid trails on sandy soil types with slopes over 25 percent may not be approved for subsoiling but will be frequently water barred. Where available, slash will be spread out across the restored landing, skid trails temporary roads and non-system access roads. Additional seeding and/or mulching may be required by the NEPA authorizing

ID	Description																																			
	official based on recommendations from FS hydrologist/soil scientist. Stabilize and strategically skid trails, temporary roads, and non-system access roads where drainage control issues are evident or expected. After use, these features should be barricaded at or near system and non-system road intersections to discourage vehicle traffic from accessing these features. Available natural materials such as rock boulders, logs, root wads and earth should be used where available to replicate a natural setting.																																			
HYD-26	Where temporary road or skid trail construction involves cut and fill, the feature will be subsoiled, then re-contoured to match the existing topography. Subsoiling will be 18 inches minimum depth on skid trails and temporary roads and landings. The subsoiler will be lifted where substantial root and bole damage to larger trees will occur from subsoiling. Skid trails on sandy soil types with slopes over 25 percent may not be approved for subsoiling but will be frequently water barred. Subsoiling will not occur on shallow soils where the displacement of rocks disrupts soil horizons or where there are concerns about the spread of root disease, or damage to tree roots. Subsoiling skid trails, temporary roads, and landings within harvest units on coarse textured soils (USDA texture classes: sands, loamy coarse sands; and coarse sandy loams with less than 5 percent clay content) that have developed from granitic parent material will generally not be recommended by hydrologist/soil scientist.																																			
HYD-26A	The general desired spacing for waterbars by erosion hazard rating (EHR) and percent slope is as follows: <table><tr><th>% Slope</th><th>Low EHR</th><th>Medium EHR</th><th>High EHR</th><th>Very High EHR</th></tr><tr><td>1-6</td><td>400 ft</td><td>350 ft</td><td>300 ft</td><td>250 ft</td></tr><tr><td>7-9</td><td>300 ft</td><td>250 ft</td><td>200 ft</td><td>150 ft</td></tr><tr><td>10-14</td><td>200 ft</td><td>175 ft</td><td>150 ft</td><td>125 ft</td></tr><tr><td>15-20</td><td>150 ft</td><td>120 ft</td><td>90 ft</td><td>60 ft</td></tr><tr><td>21-40</td><td>90 ft</td><td>70 ft</td><td>50 ft</td><td>30 ft</td></tr><tr><td>41-60</td><td>50 ft</td><td>40 ft</td><td>25 ft</td><td>15 ft</td></tr></table>	% Slope	Low EHR	Medium EHR	High EHR	Very High EHR	1-6	400 ft	350 ft	300 ft	250 ft	7-9	300 ft	250 ft	200 ft	150 ft	10-14	200 ft	175 ft	150 ft	125 ft	15-20	150 ft	120 ft	90 ft	60 ft	21-40	90 ft	70 ft	50 ft	30 ft	41-60	50 ft	40 ft	25 ft	15 ft
% Slope	Low EHR	Medium EHR	High EHR	Very High EHR																																
1-6	400 ft	350 ft	300 ft	250 ft																																
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10-14	200 ft	175 ft	150 ft	125 ft																																
15-20	150 ft	120 ft	90 ft	60 ft																																
21-40	90 ft	70 ft	50 ft	30 ft																																
41-60	50 ft	40 ft	25 ft	15 ft																																

F- 12: Water Drafting

ID	Description
HYD-27	Abate dust from logging traffic with water selected from water drafting sites that have suitable stream flow and access. When water is scarce, the use of alternative sources such as chlorite, sulfonate, or other dust abatement materials are allowed outside of the RCA EEZs.
HYD-28	New and existing (where modifications or improvements are necessary) water drafting sites will be identified in consultation with qualified specialists prior to use.
HYD-29	Maintain minimum pool levels during drafting using measurements such as staff gauges, stadia rods, tape measures, etc.
HYD-30	Water-drafting sites will be designed and constructed so that oil, diesel fuel, or other spilled pollutants do not enter the stream. Back-down ramps will be constructed to ensure the streambank stability is maintained and sedimentation is

ID	Description
	minimized. Rocking, chipping, mulching, or other effective methods are highly recommended to achieve this objective.
HYD-31	As necessary, earthen or log berm, straw waffle, certified hay or rice straw bale berms, or other containment structures will be constructed above the full bank channel water line at the drafting site to protect the streambank.
HYD-32	Forest personnel and contractors will use the Forest Service approved suction strainer (FSM 5161) or other foot vales with screens having openings less than 2mm in size at the end of drafting hoses. The suction strainer will be inserted close to the substrate in the deepest water available; the suction strainer will be placed on a shovel, over plastic sheeting, or in a canvas bucket to avoid uptake of substrate or aquatic biota. “Mucked out” debris, bedload sediment, etc. will be transported to an appropriate disposal site (to be designated) if no apparent site is feasible.

F- 13: Riparian Conservation Area (RCA) Operating and Equipment Specifications for WUI Defense Zones

Hydrologic Feature	RCA Width	EEZ Buffer <35% Slope	EEZ Buffer 35-80% Slope	Minimum Rx Burn Distance
Perennial Stream	300 ft	25 or 82 ft	82 ft	25 or 82 ft
Intermittent Stream	150 ft	25 or 82 ft	82 ft	25 or 82 ft
Special Aquatic Feature (lake, wet meadow, wetland, fen, spring, etc.)	300 ft	25 or 82 ft	82 ft	25 or 82 ft
Ephemeral Stream	150 ft	15 ft	15 ft	15 ft
Other Riparian Feature (dry meadow, seasonal wetland)	150 ft	15 ft	15 ft	15 ft

F- 14: Riparian Conservation Area (RCA) Operating and Equipment Specifications Outside of WUI Defense Zones

Hydrologic Feature	RCA Width	EEZ Buffer <35% Slope	EEZ Buffer 35-80% Slope	Minimum Rx Burn Distance
Perennial Stream	300 ft	25 or 82 ft	82 ft	25 or 82 ft
Intermittent Stream	150 ft	25 or 82 ft	82 ft	25 or 82 ft
Special Aquatic Feature (lake, wet meadow, wetland, fen, spring, etc.)	300 ft	25 or 82 ft	82 ft	25 or 82 ft
Ephemeral Stream	150 ft	15 ft	25 ft	15 ft
Other Riparian Feature (dry meadow, seasonal wetland)	150 ft	15 ft	15 ft	15 ft

Additional RCA considerations:

- Fell trees away from streams.
- For streams and SAFs, minimum buffers vary depending on the presence of special-status aquatic species.
- Prescribed burning is allowed in RCAs, but ignitions are not. Prescribed fire must back into this zone.
- In occupied or unsurveyed suitable habitat for special-status amphibians, the minimum exclusion distance is increased to 82 feet.
- Minimum buffers for meadow features vary depending on the condition of the meadow (e.g., if the meadow is encroached by conifers, there would be a smaller buffer).

Herbicide Use

F-15: General Measures

ID	Description
HU-1	A spill kit and safety plan will be on-site during herbicide treatments. All applications will follow CA label requirements.
HU-2	No more than daily-use quantities of herbicides will be transported to the project site. Exceptions will be made for crews staging in remote locations. Under these circumstances, crews may bring enough quantities of herbicides to last for the planned duration of field work. In these instances, the herbicides will be stored at a minimum of 100 feet from any body of water or stream channel, unless prior approval has been granted by a Forest Service Hydrologist or Forest Service Biologist, to prevent them from entering the water should a spill or leak occur.
HU-3	Equipment used for transportation, storage, or application of herbicides will be maintained in leak-proof condition and secured to prevent tipping during transport.
HU-4	Impervious containment material will be placed beneath mixing areas to contain any spills associated with mixing/refilling.
HU-5	No herbicide application will occur during precipitation, or if precipitation in excess of 0.1 inches is forecasted (>50% probability) 24 hours before or after project activities, or as required by the label. Formulations containing triclopyr butoxyethyl ester (BEE) are not being considered.
HU-6	To prevent overspray and limit human exposure, spray application of herbicides will not be carried out when wind speeds are 10 mph or greater.
HU-7	Herbicide spray equipment will not be washed or rinsed within 100 feet of any body of water or stream channel. All herbicide containers and rinse water will be disposed of consistent with the product label and in a manner that would not cause contamination of waters.
HU-8	Prior to initiating herbicide treatment, signs will be posted at public access points to treatment areas. Information on signs will include the herbicides being used, dates of application, and the name and telephone number of a contact person. Signs will be posted two weeks before and after an area has been treated with herbicide.
HU-9	Recently treated areas shall not be reentered until the herbicide has dried. If the herbicide label specifies a reentry period or restricted entry interval, treated areas must be posted with signs warning visitors to not enter the treated area until the specified interval has elapsed.
HU-10	In foliar application treatment areas where members of the public might consume vegetation or fruit growing on site, steps will be taken to avoid the potential for consumption of fruit exposed to herbicides. This may include cutting the edible vegetation or fruit prior to treatment, tarping or adjusting treatments to avoid

ID	Description
	fruiting time. No measures are needed if the foliar herbicide treatment is at least 25 feet away from a fruiting plant.
HU-11	Culturally significant plant gathering grounds will be identified by cultural monitors and avoided for direct herbicide application. These areas will be identified to herbicide applicators for avoidance, by a PNF Botanist or their designee, or a Cultural Monitor. Gathering grounds will be buffered a minimum of 25 feet to prevent spray drift. Best management practices for drift reduction measures will be in place.
HU-12	The following herbicide application buffers will be observed for milkweed, culturally significant, and special-status plant species within the project area: • For reforestation treatments, no broadcast or direct applications would occur within 25 feet of milkweed, culturally significant, and special-status plant species. Modifications may be made in consultation with a PNF botanist. • For invasive plant treatments, no directed spray or select application would occur within 25 feet of milkweed, culturally significant, and special-status plant species. Buffers may be waived if plants are covered by a protective barrier. Under saturated/wet soil conditions, only select herbicide application is permitted within 100 feet of rare plant species. Modifications may be made in consultation with a PNF botanist. • Herbicide applicators will be instructed on proper plant species identification as needed before implementation.
HU-13	All private property boundaries will be protected with a 50-foot buffer for herbicide treatment and mixing. This design feature may be waived through mutual agreement with the adjacent landowner.

F-16: Standard Protection Measures Established by Forest Service Direction

ID	Description																
HU-14	The Forest Service Handbook contains general provisions for herbicide transportation, handling, application, and emergency spill response and reporting. This plan requires adherence to the herbicide label and material safety data sheet providing more detailed instructions on handling, storage, protective equipment, and spill cleanup. This information will be available on-site during herbicide treatments. (Forest Service Manual (FSM) 2150 (Forest Service, 2014) and FSM 2509.22 BMP 5-10 (Forest Service, 2011).																
HU-15	Streamside wet area protection (SWAP), such as leaving an untreated strip of land alongside surface waters, wetlands, and riparian areas, will be implemented during spray applications of herbicides. <table><tr><th>Hydrologic Feature</th><th>RCA Width</th><th>SWAP Buffer <30% Slope</th><th>SWAP Buffer 30-50% Slope</th></tr><tr><td>Perennial Stream</td><td>300 ft</td><td>107 ft</td><td>107 ft</td></tr><tr><td>Intermittent Stream</td><td>150 ft</td><td>107 ft</td><td>107 ft</td></tr><tr><td>Ephemeral Stream</td><td>150 ft</td><td>25 ft</td><td>25 ft</td></tr></table>	Hydrologic Feature	RCA Width	SWAP Buffer <30% Slope	SWAP Buffer 30-50% Slope	Perennial Stream	300 ft	107 ft	107 ft	Intermittent Stream	150 ft	107 ft	107 ft	Ephemeral Stream	150 ft	25 ft	25 ft
Hydrologic Feature	RCA Width	SWAP Buffer <30% Slope	SWAP Buffer 30-50% Slope														
Perennial Stream	300 ft	107 ft	107 ft														
Intermittent Stream	150 ft	107 ft	107 ft														
Ephemeral Stream	150 ft	25 ft	25 ft														

ID	Description			
	Special Aquatic Feature (lake, we meadow, wetland, fen, spring, etc.)	300 ft	107 ft	107 ft
	Other Riparian Feature (dry meadow, seasonal wetland)	150 ft	25 ft	50 ft
	*Minimum effective groundcover of 50% is required prior to application and documentation needs to be submitted to Water Board.			
HU-16	An herbicide application monitoring program will be established as a part of the project. The monitoring program will: 1) determine whether herbicides were applied safely, were restricted to intended target areas, and did not result in effects to non-target species, 2) document and provide early warning of hazardous conditions resulting from possible herbicide contamination of water or other non-target areas, and 3) determine the extent, severity, and possible duration of any potential hazard that may exist.			
HU-17	The Forest Service will maintain a safety plan specific to this project that includes a job hazard analysis, including personal protective equipment (PPE) needs (FSH 6709.11; Forest Service, 1999) and addresses risk and standard cleanup procedures (Forest Plan, part 2, p. 106; FSM 2153.3 [Forest Service, 1994b]; FSH 2109.14,16 [Forest Service, 1994b]).			
HU-18	Judicial use of herbicides for the targeted treatment of invasive species may be used within stream buffers, in accordance with label requirements and Forest Service regulations, and in consultation with Forest Service Wildlife Biologist.			

F-17: Water Board Requirements

ID	Description			
HU-19	Where management activities are planned on a burned area with slopes greater than 30%, a minimum of 50% average effective groundcover is required to be documented prior to pesticide application. Documentation shall be provided to the Central Valley Water Board in the pesticide notification 30 days prior to application if the project is enrolled under Category 5A. Subsequent changes to the proposal must be submitted in writing no less than 48 hours prior to pesticide application.” “Effective Ground Cover”, [...] means any combination of slash (lopped and in close contact with the ground), mulch (large wood chips, wood shreds, wood strand blends, straw, bark, surface rock fragments larger than ¾ inch), plants, and plant litter. Large wood chips are a minimum of 2 inches in length and at least four (4) times longer than they are wide: If the project is enrolled under Category 5B, Forest Service shall notify the Central Valley Water Board, in writing, at least 15 days prior to any proposed application of pesticides.			

Recreation and Public Use

F-18: General Recreation

ID	Description
REC-1	At the discretion of the Forest Service, recreation areas (designated roads, trails, trailheads, staging areas, and dispersed campsites) may be temporarily closed to provide for public safety during active tree removal operations. Advance notice of campground closures will be coordinated with the campground concessionaire, posted at recreation sites, and shared with the public via social media and a press release.
REC-2	All recreational improvements (directional and informational signs, barriers, etc.) will be protected. If any barriers (including natural barriers) or improvements are damaged or removed during Project activities, they will be replaced and re-installed in the same location and manner immediately following vegetation management operations.
REC-3	Skid trails will be treated to prevent post-harvest use by off-highway vehicles (OHV). Skid trails that intersect forest roads or trails will be revegetated, camouflaged, or barricaded with natural materials once they are no longer in use.
REC-4	Within Recreation Areas, new landings will be sited in coordination with a Recreation Specialist and will be fully decommissioned and closed following use.
REC-5	Within recreation areas, avoid scheduling implementation work between the Memorial Day and Labor Day holidays. When not possible, avoid disruption to recreation activities and high use recreation sites on weekends and holidays.
REC-6	Improve and expand developed recreation opportunities to meet demands.

F-19: Trails

ID	Description
TRAIL-1	Advanced notice of trail closures would be posted at trailheads and on the internet. During active logging, trails would be closed for safety. If possible, trails should be closed after Labor Day to reduce impacts to Forest visitors.
TRAIL-2	No skidding on non-motorized trails. Motorized trails will be identified in advance of treatments and avoided when possible. If motorized trails must be used, crossings are to be made perpendicular to trails, unless review by recreation staff determines that site disturbance can be minimized, and trail integrity can be preserved. Recontour/smooth and scatter material to conceal and discourage use of skid trails where they cross the trail. Protect all existing structures such as turnpikes, bridges and signs during thinning and burning.
TRAIL-3	Resource management adjacent to and along the trail corridor is consistent with Recreation Opportunity Spectrum Objectives and desired conditions of adjacent management areas. FSH 2309.18, National Quality Standards for Trails.

ID	Description
TRAIL-4	New trail construction will follow Forest Service design standards from FSH 2309.18 Trails Management Handbook as appropriate for trail class and user type.
TRAIL-5	A cultural monitor will be present during trail alignment and field verification activities. Discovery of culturally significant resources in the pathway of a proposed trail will prompt the trail to be rerouted as needed. A cultural monitor will provide feedback on how the trail should be realigned to protect cultural resources.

F-20: Pacific Crest Trail (PCT)

ID	Description
PCT-1	Trees to be removed will be marked and trees remaining will be un-marked within the immediate foreground viewing distance zone (300') from the PCT.
PCT-2	Cut stumps as low as possible within the immediate foreground viewing distance zone (300') from the PCT.
PCT-3	Angle cuts away from the trail within the immediate foreground viewing distance zone (300') from the PCT.
PCT-4	Piles will be placed and burned outside of the immediate foreground viewing distance zone (300') from the PCT as conditions allow.
PCT-5	Trail closures will be communicated to Pacific Crest Trail Association (PCTA) staff.

F-21: Visual Resources

ID	Description
VQO-1	Within Retention Zones: provide a natural-appearing landscape where management activities are not visually evident. Locate landings and primary skid trails away from the immediate foreground along trails and primary roads.
VQO-2	Within Retention Zones: minimize stump height in both mechanical and hand thinning treatment units within the immediate foreground of trails and primary roads. Target consumption of burn piles to 90% or greater where they are visible from trails and primary roads.

F- 22: Wild and Scenic Rivers

ID	Description
WSR-01	No river channel straightening, structural bank stabilization, riprapping, instream structures, or other hydrological modifications are permitted within the waterway of eligible Wild and Scenic Rivers.
WSR-02	Establish a quarter-mile corridor boundary along eligible Wild and Scenic River segments.
WSR-03	Vegetation treatment types are allowed within eligible Wild and Scenic River corridors as follows: • “Wild” segments: prescribed fire only • “Scenic” segments: hand thinning and prescribed fire only • “Recreational” segments: prescribed fire, hand thinning, and mechanical thinning

ID	Description
WSR-04	Do not construct temporary roads within eligible Wild and Scenic River corridors.
WSR-05	Maximize protection of non-affected timber and ground vegetation during removal operations and slash treatment within eligible Wild and Scenic River corridors.
WSR-06	Treatment unit edges within eligible Wild and Scenic River corridors should be horizontally feathered and naturally appearing.
WSR-07	Trees to be removed will be marked and trees remaining will be un-marked within the immediate foreground viewing distance zone (300') from eligible Wild and Scenic Rivers.
WSR-08	Cut stumps as low as possible within the immediate foreground viewing distance zone (300') from eligible Wild and Scenic Rivers.
WSR-09	Angle cuts away from the trail within the immediate foreground viewing distance zone (300') from eligible Wild and Scenic Rivers.
WSR-10	Piles will be placed and burned outside of the immediate foreground viewing distance zone (300') from eligible Wild and Scenic Rivers as conditions allow.

All Other Resources

F-23: Air Quality

ID	Description
AQ-1	Prescribed fire projects, including underburning, broadcast burning, pile burning will be implemented under an approved smoke management plan with a valid air pollution permit from the applicable Air Pollution Control District (i.e., Northern Sierra Air Quality Management District).
AQ-2	Stabilize roadways and abate dust to avoid unacceptable resource damage or to allow use of otherwise impassable or unsafe roads.
AQ-3	Give preference to fuel utilization. Where utilization will not be effective, employ broadcast burning or underburning, pile and burn treatment, and/or fuelbreak system construction.

F-24: Fire and Fuels

ID	Description
FF-1	Prescribed fire projects, including underburning, broadcast burning, and pile burning will be implemented under an approved Prescribed Fire Plan.
FF-2	A cultural monitor will be on site for fire management feature construction and maintenance in culturally sensitive areas. Hand thinning will be used where necessary to protect culturally significant resources.
FF-3	Control erosion on fire management features and protect aquatic resources by fully installing waterbars (where appropriate for soil and slope conditions) to minimize hydrologic connection. See Hyd-26A for waterbar spacing.
FF-4	Remove dense fuel concentrations along and adjacent to fire management features.

ID	Description
FF-5	Provide a sufficient width (1-2 dozer blades or 8-16ft.) that is not obstructed with large down wood except where needed to block traffic.
FF-6	Effectively block traffic where fire management features intersect open roads and trails.
FF-7	Cultural monitors will ground truth the proposed fire management feature along Keddie Ridge to identify culturally significant areas.
FF-8	Fire management features along Keddie Ridge will feature hand thinning in designated, culturally significant areas at the discretion of cultural monitors and the Forest Service archaeologist.
FF-9	Cultural monitors will be present for feature construction near culturally significant areas along Keddie Ridge.

F-25: Lands

ID	Description
LAND-1	Land survey signs and monuments will be protected.

F-26: Minerals

ID	Description
MIN-1	Mining claimants within the project area will be notified of the project implementation schedule once it is established.
MIN-2	Protect mining claim corner markers and discovery markers. (This does not apply to signs attached to trees.) Mining claims markers include a corner monument on each of the four corners and one at the discovery point. Any other signs should be approved by the Forest Service and may require a Plan of Operations. Monuments are usually a wooden 4X4 post or a PVC pipe, often with rocks piled up around the base. However, a wide variety of variations can be found.
MIN-3	Claim signs attached to trees (marked for removal) should be removed from the tree and turned in to the Minerals staff. In most cases, attaching signs to trees is not allowed. However, many mining claims signs are attached to trees. If trees planned for removal have mining claim signs attached to them, the signs should be removed and turned in to the Minerals staff, so the signs may be returned to the claimant. The location of the sign should be noted when turning it in to the Minerals staff.
MIN-4	Plan on the ground project activities so as not to interfere with active mining operations. During the planning stages, mining claim owners should be included in public scoping. A separate cover letter for miners may be needed with the scoping information. Any responses from the claimants should be coordinated with the Minerals staff. It is important to remember that miners have a statutory right to access the minerals on their claims. Forest projects must be planned so as not to

ID	Description
	interfere with any active mining operations. Responses to scoping will help to identify any planned mining activities.
MIN-5	Check again at implementation time. Time between document input and project implementation may be a few months or a few years. Because mining claims can be dropped or new claims filed at any time, it is important to check with the Minerals staff at the time the project is about to start. A letter to new claimants may be required to allow coordination of the timing of activities.
MIN-6	Accessibility to valid and existing mining claims will be protected, and project activities will not block access to existing claims.

F-27: Range

ID	Description
RANGE-1	Grazing permittees within the project area will be notified of the project implementation schedule when established.
RANGE-2	Protect range improvements including fences, cattleguard wings, spring developments and corrals. If any improvements are damaged or removed during Project activities, they will be replaced and re-installed in the same location and manner immediately following vegetation management operations.
RANGE-3	Grazing permittees within the project area should be included in scoping for project planning.

F-28: Roads

ID	Description
ROADS-1	Maintain function of drainage features to protect forest resources and investment of NFS roads through road maintenance activities. Replace undersized or failed drainage features and install erosion protection at inlets and outlets where needed. Adhere to most stringent Best Management Practices and California State Water Quality Control Board Standards for Best Management Practices.
ROADS-2	Where feasible and necessary for chip vans to access mastication treatment areas and haul chips off-site, maintain slope embankments and construct curve widening at critical road locations only. Avoid areas where curve widening will cause unacceptable resource damage.
ROADS-3	Evaluate the feasibility for potential additional intervisible turnouts on NFS roads that will utilize chip vans and/or log trucks for material removal from project site.
ROADS-4	Evaluate the need and feasibility for potential additional turnouts on narrow NFS roads that are near communities for evacuation egress and first responder access.
ROADS-5	Routine NFS road maintenance will include roadside brushing for sight clearance and visibility of traffic control devices. Road prism surfaces will be cleared of overgrown vegetation, repaired, and graded to facilitate safe access to and within the Project area for the critical vehicles. Surface types will not change, but spot

ID	Description
	locations may be eligible for improvement to facilitate critical vehicle access and/or for forest resource protection. Existing traffic control devices will be brought back up to standard by either repair or replacement.
ROADS-6	Hazard tree removal may occur on both sides of NFS roads accessing and within Project areas to facilitate safer travel for the public as well as first responders and Project implementation personnel.
ROADS-7	Public access and use of NFS roads may be limited or prohibited at times during Project implementation, especially for but not limited to safety reasons. During haul of Project generated materials (logs, chips, etc.), some Operational Maintenance Level 2 roads (OP-ML 2) may temporarily be improved through surface grading or other measures to facilitate use by critical vehicles. Temporary improvements will not modify the Forest's Travel Management user vehicle type nor time of use after project completion. Motor Vehicle Use is not expected to change.
ROADS-8	Construction of temporary roads should attempt to utilize previously decommissioned road or skid trail prisms where possible. Decommission the temporary roads as part of project implementation.
ROADS-9	Access to existing approved water drafting sites shall be restored, armored, and protected to prevent soil erosion and degradation to water sources. Water is necessary for dust abatement and other project activities, in addition to need for response to potential fires in or near project area.

F-29: Silviculture

ID	Description
SILV-1	To prevent the infection and spread of <i>Heterobasidion</i> Root Disease, it may be necessary to treat conifer stumps after harvest operations. Application of a borate compound by hand should follow the most current Region 5 Guidelines. Decision to treat stumps with a borate compound should occur after discussion with the district silviculturist and/or with Forest Health Protection Staff.
SILV-2	Where present, retain all hardwood and riparian species. Retain the largest, most vigorous dominant and co-dominant trees to create a residual stand that would be comprised of larger fire-resilient trees. Species preference would be determined by dominant forest type. In general, prefer to retrain shade intolerant species including rust resistant Sugar Pine, Black Oak, Ponderosa and Jeffery Pine, and to an extent, Douglas-fir.
SILV-3	Following site preparation, plant native conifers using a mixture of planting arrangements and densities. Site preparation activities may include use of herbicides. Competitive vegetation would be treated using herbicides dispensed from a backpack using directed foliar spray. Conifer species prescribed for each unit would be at the appropriate elevation zone, and species would be appropriate for the site. In general conifer species such as rust-resistant Sugar Pine, Douglas-Fir, Ponderosa Pine, Jeffery Pine, Red Fir, and Incense Cedar would be planted.

ID	Description
	Planting conifers would replace the seed sources of desired species lost during the fire. Planting densities would range from approximately 50 to 300 trees per acre/depending upon site and reforestation objectives.
SILV-4	Release treatments will occur around desired seedlings with the intention to reduce competing vegetation with the intent to enhance seedling survival. Release treatments would include radial applications of herbicide from 7-10 feet surrounding planting site.
SILV-5	In general, unless amended by a Forest Plan Revision, no trees greater than 30.0" DBH shall be cut during harvest operations unless deemed a hazard per OSHA requirements or is an impediment to operational feasibility.
SILV-6	For plantations (0x to 2x CWHR size/density classes): generally, design treatments to have less than 5 tons/acre in surface fuels (3 inches and smaller), less than ½ foot fuel bed depth, average less than average 4 feet in flame length (90 th percentile fire weather conditions) and that these treatments should be effective for more than 5 to 10 years.
SILV-7	No more than 1 shade-intolerant non-true fir species such as Douglas-fir or ponderosa pine greater than 30 inches DBH but less than 40 inches DBH may be removed per 10 acres of commercial thin in the project area (excluding those trees removed for reasons of protecting public safety).

F-30: Special Designations

ID	Description
SD-1	Project activities within special land allocations will be carried out in compliance with prescriptions and limitations identified in the PNF Land and Resource Management Plan, as amended by the SNFPA.

Appendix G: Implementation Guide

Implementation Guide

Outline

North Fork Forest Recovery Project

MT. HOUGH RANGER DISTRICT, PLUMAS NATIONAL FOREST



Plumas National Forest

159 Lawrence Street

Quincy, CA 95971

I: Introduction

This document provides an outline of an Implementation Guide intended to be used by the Plumas National Forest (PNF) in planning for and tracking implementation activities in the North Fork Forest Recovery Project (NFFRP). The Implementation Guide is not a requirement of the environmental compliance (NEPA) process. The intention of this outline is to provide the public an opportunity to see steps that will be considered when moving from the planning phase, into on-the-ground implementation. The intent is that these steps will be discussed by the project Interdisciplinary Team and developed into a working implementation planning and tracking tool. As an adaptive management tool, once drafted, the Implementation Guide will remain a living document, to enable improved project tracking and management processes.

Implementation Guide Purpose

The implementation guide will be used by the PNF to implement the NFFRP by tiering implementation activities to the Environmental Assessment and Final Decision. The purpose of the guide is to:

- Demonstrate regulatory compliance with all overarching law, policy, and regulation.
- Aid in determining when additional data collection or adaptive management strategies are needed for any actions within a given Implementation Area of the NFFRP.
- Ensure public engagement occurs throughout the lifecycle of the project.
- Provide implementation planning consistency across a large landscape.
- Result in individual Implementation Plans for specific Implementation Areas in the NFFRP that document the locations and timing of management actions, applicable mitigations (project design features), and adhere to the Decision Notice (DN).

Project Context

The North Fork Forest Recovery Project (NFFRP) is a landscape-scale (166,889-acre) forest restoration project on the Plumas National Forest focused on post-fire recovery following the 2021 Dixie Fire. A condition-based management approach was utilized during the Environmental Assessment process to examine known or expected environmental conditions as well as range of proposed management activities. Condition-based management allows for treatments to be aligned (post-decision but prior to implementation) with current conditions on the ground. The Implementation Guide will provide a framework for assessing current site conditions, implementing project design features, and prioritizing project work. The

Implementation Guide will assure the assigned management activity is responsive to any changes in environmental conditions and verify that the appropriate treatment is applied to move the landscape toward desired conditions.

Outline Contents

This outline is divided into three sections: (1) Introduction, (2) Planning Steps, and (3) Resource Pre-implementation Checklists. The planning steps provide an overview of the intended components and extent of the implementation guide. These steps would be further developed by the Interdisciplinary Team once a Decision Notice has been signed for the project. The Resource Implementation Checklists were developed during the Environmental Assessment process, during which resource specialists were prompted to consider how to plan for and track site-specific implementation activities.

II: Implementation Planning Steps

Step 1: Identify Project Implementation Areas

The first step of the implementation guide will be to identify where work will take place. These implementable portions of the larger Project area will be called Implementation Areas (IAs). Implementation Areas will be prioritized based on components outlined in the Project Purpose and Need (e.g. community protection). Throughout the Project area, the PNF is balancing multiple land management objectives (e.g., community protection, forest health, watershed improvement, recreation improvement) and is committed to implementing with these tradeoffs in mind.

Step 2: Compile Background Materials and Identify Management Opportunities within Implementation Areas

Once Implementation Areas have been identified and prioritized, the Project Interdisciplinary Team will consult the Environmental Assessment and Decision Notice, as well as Forest Service guidance documents (e.g., 2004 SNFPA ROD) to identify potential activities and treatments for the implementation area that are consistent with analysis and management direction.

Step 3: Complete Resource Pre-Implementation Checklists

In this step, resource specialists on the Project Interdisciplinary Team will review the Implementation Area identified in Step 1 and complete their relevant checklist. The purpose

of the resource checklists is to ensure that each specialist has an opportunity to ensure the correct protection and mitigation measures have taken place before implementation begins.

Draft Resource Checklists are provided in the next section, and include the following resources:

- Aquatic and Terrestrial Wildlife
- Botanical and Rare Communities
- Cultural Resources
- Fire and Fuels
- Silviculture and Vegetation
- Hydrology and Soils
- Recreation and Transportation
- Deciding Official Checkpoint

Step 4: Draft Implementation Plan and Initiate Surveys

In this step, the Interdisciplinary Team will review all information compiled in Steps 1 -3 and draft an Implementation Plan for the Implementation Area identified in Step 1. The Implementation Plan will include treatment units and outline specific treatment methods. Any remaining needed resource surveys (e.g., wildlife surveys) will also take place during this step.

Step 5: Present Draft Implementation Plan to Stakeholders

In this step, the PNF will share the draft implementation plan on the FS website and provide an opportunity for local community members and stakeholder to provide feedback on the draft plan before it is finalized. The draft plan will include maps so that the public can see and understand where specific treatments are being planned.

Step 6: Community Engagement, Information Sharing, and Opportunities for Input

This step of the Implementation Guide will outline processes for public engagement, prior to implementation beginning, including an annual meeting held by the PNF to provide information to the public and answer questions on upcoming implementation activities. Additional opportunities for community engagement such as field trips and educational outreach would be described in this step of the Implementation Guide

Step 7: Identify Additional Monitoring Needs

This step would provide a checkpoint for the Interdisciplinary Team to consider any additional monitoring needs (e.g., post fire recovery, water quality) for implementation of the project, above those that are required in the Forest Plan. Additional monitoring recommendations made by stakeholders would be considered, but additional monitoring would be at the discretion of the line officer.

Step 8: Finalize Implementation Plan

At this stage, the Interdisciplinary Team would update the draft implementation plan created in Step 4 with information and revisions from public involvement and survey results.

Step 9: Submit for District Ranger Approval

Submit the completed Implementation Plan to the district ranger for review and approval.

Step 10: Conduct Contract Review (if applicable)

Once the implementation plan for the specific implementation area is complete, the Timber Contracting Officer will complete the contract package, ensuring consistency with the Implementation Plan and the Environmental Assessment.

III: Resource Pre-Implementation Checklists

Aquatic and Terrestrial Wildlife

Resource Lead: [Insert name here]

Relevant Plan Direction

- SNFPA S&G #32-35
- SNFPA S&G #56-63
- SNFPA S&G #71-94

Applicable Project Design Features

- AMPHIB-1 through AMBHIP-7
- WOLF-1
- CSO and AGOS-1 through CSO and AGOS-6
- WLDF-1, WLDF-2, WLDF-3, and WLDF-4
- SD-1

Resource Checklist

☐ Review existing data to determine known locations of Threatened and Endangered (T&E) species, designated critical habitats, Regional Forester's Sensitive Species, or locally rare species (i.e., consult California Department of Fish and Wildlife (CDFW) spatial database on AGOL, FS GIS shapefiles and other applicable records.). As part of the above process and specific to Terrestrial Wildlife, also:

- Consult with CDFW for current range information for all federally listed animals to determine applicability of Forest Plan standards
- Consult with CNDDDB

☐ Obtain updated official species list from IPaC (Information for Planning and Consultation) for the project area at: <https://ipac.ecosphere.USFWS.gov/>. If new species are listed and present in IA and could be affected by the proposed action, consult with US Fish and Wildlife Service (USFWS)/ supplement NEPA accordingly.

- List Date IPaC pulled:

☐ Consult with CDFW to verify current information about den and rendezvous sites for known Grey Wolf packs

☐ Review current spatial data for known populations of carnivores such as pacific fishers and pacific martens in IA's

☐ Review existing data to determine the presence or potential of priority wildlife species such as migratory songbirds (i.e., consult CDFW, Region 5 records).

☐ Review current spatial extent of California Spotted Owl and Northern Goshawk PAC's, HRCA's, and potential habitat present in IA's. Ensure all Activity Centers, PAC's, and HRCA's have been updated in NRM based on project specific surveys and have been made available to implementation team

☐ All necessary LOPs have been identified and communicated to the Interdisciplinary Team.

If relevant, attach a list additional survey needs or pertinent information to include in the Implementation Plan.

☐ Maps, visual aids, records of consultation, and copies of existing data have been attached. Level of detail should be sufficient to allow for adequate planning and identification of issues and concerns.

Please select one of the statements below:

☐ All activities shown in the draft plan have been reviewed for compliance with the North Fork Forest Recovery EA or other relevant NEPA compliance and my resource. There are no changed conditions at the time of this review.

OR

☐ All activities shown in the draft plan have been reviewed for compliance with the North Fork Forest Recovery EA or other relevant NEPA compliance and my resource. There are changed conditions or specific actions that are not in compliance. These conditions or actions are listed below.

- Include new listings on IPaC, reclassifications of endangered or proposed listed species, and candidates for listing as threatened or endangered.

Botanical and Rare Communities

Resource Lead: [Insert name here]

Relevant Plan Direction

- SNFPA Standard and Guideline #125 (USDA FS 2004): Conduct field surveys for Threatened, Endangered, Proposed and Sensitive (TESP) plant species early enough in the project planning process that the project can be designed to conserve or enhance TESP plants and their habitat.
- Conduct surveys according to procedures outlined in the Forest Service Handbook (FSH 2609.25.11).
- If additional field surveys are to be conducted as part of project implementation, survey results must be documented in the project file (USDA FS 2004, ROD Errata. pg. 66).

Applicable Project Design Features

- BOTANY-1 through BOTANY-12
- INVASIVE-1 through INVASIVE-6

Resource Checklist

- ☐ Resource Specialist has reviewed project Design features
- ☐ Review existing data to determine known locations of TES species, designated critical habitats, Forest Sensitive and watchlist species, or locally rare species (i.e., consult CDFW-CNDDDB RareFind, USFWS, FS GIS shapefiles and other records).

☐ Obtain updated official species list from IPaC for the project area at:

<https://ipac.ecosphere.USFWS.gov/>. If new species are listed and present in IA and could be affected by the proposed action, consult with USFWS/ supplement NEPA accordingly.

- List date IPaC pulled:

☐ Review existing data to determine new known locations of rare habitats and communities (i.e. bogs, fens, serpentine outcrops), with a distance buffer (e.g. two miles in un-surveyed areas) to include nearby occurrences that have potential to occur in the project area.

☐ Review existing data to determine known locations of Non-Native Invasive Species (NNIS); If needed, utilize risk assessment, and conduct botanical surveys and NNIS assessment to determine if individuals or populations occur once activity locations are known.

☐ Develop survey plan including floristic timing survey schedule.

- Ensure surveys have been completed prior to implementation activities.

☐ Ensure known rare and invasive populations in treatment units are scheduled to be flagged prior to implementation.

☐ Communicate known site locations to Interdisciplinary Team for avoidance (i.e., protected information for internal planning purposes only).

☐ Determine anticipated timing of activities to occur in the IA. Disclose this timing in the space below and alert Project Lead to determine on-site availability of biological and cultural monitors.

Tribal Relations

☐ Designate previously identified areas for cultural gathering grounds, ensure occurrences are flagged for avoidance in treatment areas.

☐ Outreach with local tribal groups to share information related to culturally significant plants. Invite tribal representatives to identify concentrated areas of culturally significant plants and gathering grounds to maintain and manage using Traditional Ecological Knowledge.

- Culturally significant plants may include but are not limited to: Beargrass (*Xerophyllum tenax*), Elderberry (*Sambucus sp.*), Redbud (*Cercis occidentalis*), and Willow (*Salix sp.*).

Attach a list of additional survey needs (if relevant) or pertinent information to include in the Implementation Plan (e.g., additional opportunities for unique habitat work, records of additional site visits).

☐ Maps and visual aids have been attached. Level of detail should be sufficient to allow for adequate planning and identification of issues and concerns.

Please select one of the statements below:

☐ All activities shown in the draft plan have been reviewed for compliance with the North Fork Forest Recovery EA or other relevant NEPA compliance and my resource. There are no changed conditions at the time of this review.

OR

☐ All activities shown in the draft plan have been reviewed for compliance with the North Fork Forest Recovery EA or other relevant NEPA compliance and my resource. There are changed conditions or specific actions that are not in compliance. These conditions or actions are listed below.

Cultural Resources

Resource Lead: [Insert name here]

Relevant Plan Direction

- SNFPA ROD p. 25
- 36 CFR 800.3 through 800.7

Applicable Project Design Features

- All actions associated with the North Fork Forest Recovery Project will follow the stipulations of the Heritage Implementation Plan (HIP) for the Plumas National Forest Protect and Recover Project (2023) developed under the National Programmatic Agreement for Phasing of Section 106 of 2021.

Resource Checklist

☐ Archaeologists gather relevant cultural resources data for IA and determine maximum surveys needed. The Tribes and the California State Historic Preservation Officer (SHPO) were previously notified of the Project during consultation of the HIP.

- Every April, all HIP consulting parties will receive annual reports on the use of the HIP.

☐ The Forest will send out consultation letters to the Tribes asking for information on known cultural resources and/or sacred sites. Once consultation is completed, begin surveys and required mitigations.

- ☐ Communicate known site locations to IDT for standard protection measures as defined by the HIP (i.e., protected information for internal planning purposes only).
- ☐ Protection measures were previously consulted under the HIP. Implement the protections measures and coordinate cultural monitors, as warranted, according to the HIP.
- ☐ Identify a member within the IDT to coordinate and collaborate with Tribal cultural monitors. This individual will notify cultural monitors of new discoveries that are relevant to Tribes and will serve as the point of contact for cultural monitors during treatment within units that possess identified or sensitive cultural resources.
- ☐ Enforce documentation practices that respect tribal confidentiality and intellectual property rights. Clearly define protocols for recording and sharing information to ensure that sensitive cultural knowledge is handled respectfully.
- ☐ Implement real-time collaboration tools that facilitate communication and information sharing between resource specialists and cultural monitors. This includes digital platforms for document sharing, virtual meetings, and collaborative decision-making to streamline the exchange of information throughout the assessment process.
- ☐ Establish a feedback mechanism that allows tribal organizations to provide input and feedback on the site assessment process. This iterative feedback loop ensures continuous improvement and helps build trust and transparency between tribal communities and resource specialists.

If relevant, attach a list of additional survey needs or pertinent information to include in the Implementation Plan.

- ☐ Maps and visual aids have been attached. Level of detail should be sufficient to allow for adequate planning and identification of issues and concerns.

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Fire and Fuels

Resource Lead: [Insert name here]

Relevant Plan Direction

- SNFPA S&G #1-5

Applicable Project Design Features

- FF-1, AQ-1

Resource Checklist

- ☐ Identify the existing fire condition class (FCC) and opportunities/needs for treatment
- ☐ Identify any existing hazardous fuels and opportunities for pre-treatment
- ☐ Identify existing Rx burn unit(s) present in the IA.
- ☐ Identify if new burn units need to be established. Consider the implementation needs for that new burn unit.
- ☐ A smoke management plan will be submitted to the appropriate Air Quality Management District.
- ☐ Review design specification to make sure they meet resource concerns as outlined in the NEPA document. Ensure LOP's are in place.
- ☐ Prepare burn plans.
 - Ensure that access roads to burn units and burn piles are properly closed after treatment is completed, and public signage is removed. Coordinate with hydrologist.
- ☐ Identify opportunities for cross-boundary work and provide a list of potential partners.
- ☐ Determine the anticipated timing of activities to occur in the IA and work with the Project Lead to coordinate on-site availability of cultural monitors. Cultural monitors will be on site for fire management feature construction and maintenance in culturally sensitive areas.
- ☐ Work with cultural monitors to determine sensitive areas for "hand thin only." Hand thinning will be used where necessary to protect culturally significant resources.
- ☐ Recommend a maintenance schedule for the IA.
- ☐ Work with the Northern Sierra Air Quality Management District to enter smoke management plans into the Prescribed Fire Information Reporting System (PFIRS).

If relevant, attach a list of additional survey needs or pertinent information to include in the Implementation Plan.

☐ Maps and visual aids have been attached. Level of detail should be sufficient to allow for adequate planning and identification of issues and concerns.

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Silviculture and Vegetation

Resource Lead: [Insert name here]

Relevant Plan Direction

- SNFPA S&G #1-31
- SNFPA S&G #36-49
- Proposed Forest Plan Amendment (Appendix B-1, S&G 6)
- Proposed Forest Plan Amendment (Appendix B-2, S&G 7)

Applicable Project Design Features

- SIL-1 through SIL-6
- HYD-12 through HYD-17
- WDLF (all)

Resource Checklist

☐ Conduct spatial unit layout and ground layout. Prepare unit prep specifications for implementation plan.

☐ GPS unit boundaries to determine treatment polygons meet NEPA sufficiency.

☐ Develop bid solicitation package and draft contract language.

- ☐ Review design specification to make sure they meet resource concerns as outlined in the NEPA document. Meet with resource specialists as needed.
- ☐ Determine connected actions (prescribed fire, herbicides, etc.). See EA, [Appendix] for a full list of actions covered by the EA.
- ☐ Alert neighboring private landowners of actions involving herbicide use.
- ☐ Determine anticipated timing of activities to occur in the IA. Disclose this timing in the space below and alert Project Lead to determine on-site availability of cultural monitors.
- ☐ Review operational feasibility and access. This includes, but not limited to:
 - Identify potential roads needed based on proposed action. Coordinate with Engineering on any needed improvements (culvert replacements, road widening, road package, etc.)
 - Temporary road construction anticipated. Coordinate with Soils, Engineering, Timber Sale Administrator, and other applicable resource areas.
 - Note slope restrictions and RCA restrictions on map.
 - Determine schedule for LOPs
- ☐ Review stand exam data in accordance with current policy (forest health, species composition, stand age, basal area, stand density index, etc.). Are additional site visits or stand information needed?

If relevant, attach a list of additional survey needs or pertinent information to include in the Implementation Plan.

- ☐ Maps and visual aids have been attached. Level of detail should be sufficient to allow for adequate planning and identification of issues and concerns.

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Hydrology and Soils

Resource Lead: [Insert name here]

Relevant Plan Direction

- SNFPA S&G #95-124

Applicable Project Design Features

- HYD-1 through HYD-32
- Table A-1 and Table A-2
- HU-2, HU-5, HU-7, HU-12, HU-15, and HU-16

Resource Checklist

- ☐ Resource Specialist has reviewed project Design features.
- ☐ Review contract and/or agreement to ensure project design features are included.
- ☐ Identify current Watershed Condition Class and identify any Priority Watersheds (Appendix). If Priority Watersheds exist, work with Forest Soil Scientist and/or Hydrologist on Watershed Restoration Action Plan (WRAP).
- ☐ Perform field and/or GIS delineation of streams and special aquatic features (e.g. lakes, bogs, fens, wet meadows, vernal pools, and springs) within the project area, identifying feature class and type. Apply Riparian Conservation Area (RCA) buffers identified in Table A-1 and Table A-2.
- ☐ Coordinate with Forest Soil Scientist to ensure past detrimental disturbance in combination with proposed treatment disturbance would not exceed 15% of the activity area. If 15% would be exceeded by the treatment, evaluate the area for soil restoration activities.
- ☐ Review operational feasibility and access. This includes but is not limited to:
 - Identify Significant Erosion or Potential Erosion Sites (SEPES). Review if sites can be added to contract and/or agreement or any other mechanism. Coordinate with Engineering and other appropriate personnel. Include sites in Notice of Intent (NOI) to the Water Board.
 - Review water drafting sites and use BMPs to ensure the site is suitable for drafting.
 - Identify potential roads needed based on proposed action. Coordinate with Engineering on any needed improvements not associated with SEPES (culvert replacements, road widening, etc.)

- Temporary road construction anticipated. Coordinate with Soils, Engineering, Timber Sale Administrator, and other applicable resource areas.
- Slope restrictions, RCA restrictions.

☐ Identify potential AOP opportunities (in conjunction with Forest Soil Scientist and Engineer).

☐ Submit NOI to Water Board.

☐ When applying herbicides in burned areas with slopes greater than 30%, a minimum of 50% average effective groundcover is required to be documented prior to pesticide application. Notification and documentation must be submitted to the Water Board prior to application. See HU-16 for details.

☐ Identify known issues that are contributing to decreased aquatic habitat quality (i.e., sediment sources, riparian function, increased water temperatures, etc.).

☐ Wild and Scenic River designation exists in the Implementation Area.

☐ Identify locations of dams and diversions for municipal or irrigation water supplies, fish hatcheries, stockwater, fire protection, or other water uses within the project area.

☐ Identify perennial and intermittent surface waters, wetlands, springs, riparian areas, groundwater recharge areas, municipal supply watersheds; private domestic water supplies; fish hatcheries; and threatened, endangered, and sensitive aquatic dependent species and fish populations near or downstream of chemical treatment areas.

☐ Determine the width of a buffer zone, if needed, based on a review of the project area, characteristics of the chemical to be used, and application method.

☐ Enter relevant planned treatments into Watershed Improvement Tracking (WIT).

☐ Tasks to be completed after initial start of project:

- Conduct BMP monitoring and enter results into BMP database. If issues are encountered use adaptive management to improve the effectiveness of BMPs.
- Conduct monitoring required by the Water Board.
- Enter accomplishments (implemented treatments) into WIT.

If relevant, attach a list of additional survey needs or pertinent information to include in the Implementation Plan.

☐ Maps and visual aids have been attached. Level of detail should be sufficient to allow for adequate planning and identification of issues and concerns.

Please select one of the statements below:

☐ All activities shown in the draft plan have been reviewed for compliance with the North Fork Forest Recovery EA or other relevant NEPA compliance and my resource. There are no changed conditions at the time of this review.

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Recreation and Transportation

Resource Lead: [Insert name here]

Relevant Plan Direction

- SNFPA S&G #69-70

Applicable Project Design Features

- REC-1 through REC-5
- TRAIL-1 through TRAIL-4
- VQO-1 and VQO-2
- PCT-1 through PCT-5

Resource Checklist

☐ Identify potential impacts to developed recreation, dispersed recreation, and trails from non-recreation actions in the IA.

☐ Identify road maintenance/improvements needed to implement proposed recreation activities.

☐ Attach the appropriate minimization criteria to this resource checklist packet for all recreation activities proposed for this IA.

☐ Coordinate with hydrologists on known sites that are contributing sediment to streams and/or other impacts to streams and special aquatic features.

☐ Confirm presence of designated National Scenic, Historic or Recreation Trails. If present, initiate any necessary inter-agency coordination.

☐ Identify potential impacts to the recreation user (user experience, access, public health and safety) from both the recreation-specific actions and non-recreation actions and determine appropriate methods of notification and communication. For example, but not limited to:

- Are there any potential road closures that may impact access to recreation sites?
Seasonal or temporary closures?
- Prescribed burning or vegetation management that may cause closures?
- Smoke or equipment that may conflict with users?
- Other?

☐ Identify any sections of the Pacific Crest Trail (PCT) that overlap with the IA. Communicate any plans to implement along the PCT with the Pacific Crest Trail Association and note the communication time/date/method in the space below.

☐ Identify Scenic Integrity Objectives (SIOs) and Recreation Opportunity Spectrums (ROS) for the IA and alert the Project Lead if there is a need to communicate with Silviculture, Soils and Engineering to ensure implementation actions adhere to these management directions.

☐ Determine the anticipated timing of field verification activities in the IA and work with the Project Lead to coordinate with cultural monitors. A cultural monitor should be present during trail alignment in the event a trail needs to be rerouted to avoid cultural resources.

☐ Confirm if there are any roads in the IA identified for decommissioning. Attach a map of these roads to the resource checklist packet.

☐ Identify opportunities to improve the condition of NFS roads. Alert the Project Lead on the need to coordinate with Silviculture, Soils and Engineering.

☐ Identify opportunities to improve developed recreation sites.

If relevant, attach a list of additional survey needs or pertinent information to include in the Implementation Plan (i.e., recreation actions that may take place in the IA that are outside the scope of the Project EA, anticipated timing of surveys or implementation activities, and a description of anticipated notices/closure order needs).

☐ Maps and visual aids have been attached. Level of detail should be sufficient to allow for adequate planning and identification of issues and concerns.

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☐ All activities shown in the draft plan have been reviewed for compliance with the North Fork Forest Recovery EA or other relevant NEPA compliance and my resource. There are changed conditions or specific actions that are not in compliance. These conditions or actions are listed below.

Deciding Official Checkpoint

Project Lead: [Insert name here]

☐ Communicate Implementation Area (IA) location to Forest Land Surveyor early so that Boundary Management policies are followed, and concerns are either addressed and/or mitigated.

☐ Verify that all resource-specific maps or visual aids have been completed and are sufficient to direct implementation activities.

☐ Review each resource-specific checklist to verify if there are any changed conditions or activities not covered in the North Fork Forest Recovery EA or other existing analysis.

If relevant, attach a list of additional survey needs or pertinent information to include in the Implementation Plan.

Appendix H: Response to Comments

During the 30-day Public Comment period for the Draft Environmental Assessment (EA), 25 letters were submitted by private individuals, organizations, groups, agencies, and industry professionals. Letters included comments expressing support for and/or concerns regarding aspects of the Proposed Action and other Draft EA content. Updates have been made to this Final EA and supporting documentation in response to many of the comments. Written comment responses, including references to any updates made, are provided below.

H- 1: Responses to comments on the Draft EA

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
Botany	There are several species considered to be rare in California, listed in the CNPS Rare Plant Inventory (RPI) that were not considered for impacts.	The Forest Service is required by agency regulations "to consider state requirements imposed for environmental protection to determine whether the action will have a significant impact." <i>Sierra Club v. U.S. Forest Serv.</i> , 843 F.2d 1190, 1194 (9th Cir.1988). 36 C.F.R. 220. For the purposes Of the California Environmental Quality Act (CEQA) Cal. Code Regs. tit. 1'4 § -15065(a) requires that where a project threatens to "substantially reduce the number or restrict the range of an endangered, rare or threatened species," the lead agency must prepare an EIR and implement feasible mitigation measures to avoid the net loss. Cal. Code Regs, tit 14 §15380(d) states that a species-need not be listed to be considered "endangered" or "rare" if information suggests that "its survival and reproduction in the wild are in immediate jeopardy from one or more causes" or "the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens," it will be considered endangered, or rare for the purposes§ 15065(a), Under the California Environmental Quality Act (CEQA), plant species listed With a California Rare Plant Rank (CRPR) of 1 or 2 under the CNPS	Federal agencies are not required to comply with CEQA. However, we do consider CRPR listings in the development of our Sensitive and Watchlist species lists and do protect many CRPR listed as well as newly discovered species that are not yet under official protections. Many of these are not analyzed in the BA/BE, but are still surveyed and managed for during project activities. If there are any specific species of concern within the project area, please contact the Forest Service Botanist for further discussion.	Design Features: Botany

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
		RPI should be evaluated for impacts, and CRPR 3 and 4 species should be considered in analysis of impacts if they meet the rarity criteria laid out in CEQA § 15380.		
Climate Change	Concerned about the cumulative treatment impacts and greenhouse gas emissions.	Cumulative effects from the adjacent Community Protection Projects, all with mechanical thinning, will create collective impacts to carbon and climate.	The Past, Ongoing, and Reasonably Foreseeable Future Actions (PORFFA) Report describes the cumulative effects analysis (CEA) approach, including temporal and geographic boundaries that set the limits for selecting actions most likely to contribute to a cumulative effect. For there to be potential cumulative effects, the effects of those actions must overlap in time and space. The CEA's temporal scope includes the past, present, and future. The temporal scope for past actions is 30 years before the present (1994-2024). Ongoing actions happen in the present. Planned projects on NFS lands listed in the USFS Schedule of Proposed Actions (SOPA) define reasonably foreseeable future actions. The geographic scope of cumulative effects analysis varies by resource (see Table 1 in the PORFFA report). A 460,179-acre combined CEA area that considered all resources was used to identify nearby projects and activities that could result in cumulative effects. The PNF's Community Protection - Central and West Slope Project falls within this boundary and is included as a reasonably foreseeable future action (see Figure 12 in the PORFFA Report). Projects beyond the combined CEA boundary, such as the Community Protection - Eastside Project, were not included as they fall outside the scope of analysis.	PORFFA Report
Climate Change	Concern about emissions from logging.	Salvage logging and logging creates carbon emissions; natural forest regeneration sequesters carbon more effectively than homogenous plantations.	The proposed North Fork Forest Recovery Project includes prescribed fire, variable density thinning and fuel reduction through mechanical and hand thinning methods, hazard tree	Climate Report and Silviculture Report

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
			removal, reforestation, invasive species management through herbicide application, hydrological restoration, transportation improvements, and the construction of fire management features. The scale of greenhouse gas emissions from this project are estimated to be 500,000 tonnes of CO ₂ eq per year over the 20-year implementation period. By comparison, recent large wildfires such as the Dixie Fire in 2021 resulted in 37 million tonnes of CO ₂ eq emissions (CARB, 2022), with a substantial portion of these emissions occurring within the project area, which represents more than 15% of the Dixie Fire footprint. These emissions far surpass potential emissions from the proposed project. Proposed actions in the NFFRP EA will reduce the likelihood and/or severity of future wildfire in the project area, achieving a net benefit in carbon emissions in comparison to catastrophic, repeat wildfire. The proposed action would result in improvements to carbon stocks in live trees compared to the No Action alternative, including making stands more resilient to future drought, pest, and wildfire events.	
Fire and Fuels	Opposed to adding routes to the PNF Motor Vehicle Use Map without substantial public input and vetting.	Permanent bulldozer lines/roads/OHV trails should be managed as shaded fuel breaks which are gated to allow for administrative access only.	The proposed action has been edited to clarify that permanent fire control lines will not be added to the Forest's recreational trail network. The draft EA includes an integrated design feature to effectively block traffic where fire management features intersect open roads and trails (IDF FF-6).	Proposed Action: Fire Management Features; Design Features: Fire and Fuels
Fire and Fuels	Ridgelines and rock outcrops are important areas for special status plant species.	Use a desktop review of CNDDDB, herbarium records, and iNaturalist to provide a preliminary list of locations to avoid placing fuel breaks on sensitive areas.	All Fire management features either have been or will be surveyed for special status plants and other sensitive resources prior to any implementation actions. As a standard part of pre-field review, we check for known occurrences in internal records as well as CNDDDB and Calflora, which includes herbarium	Design Features: Botany

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
			specimen data. PNF Botanists are aware of these habitats and will manage the plant species found according to management prescriptions in order to minimize any impacts. Fire lines will be placed strategically, with careful consideration of all resources present, in order to minimize any negative effects of necessary fire lines/fuel breaks.	
Fire and Fuels	Concern about the ingress-egress route prescription, specifically that it will log some of the last remaining green stands.	Leave more trees along ingress-egress routes.	Ingress-egress routes are vital for emergency response and evacuation, especially during wildfire events. Effective vegetation management along these routes is essential to ensure they remain passable for both residents and firefighting personnel. Proposed actions are designed to create stand conditions where fire behavior would be expected to be reduced, and emergency responders and evacuees can travel safely as needed. This proactive approach not only enhances accessibility during emergencies but also helps protect the surrounding community and infrastructure from potential wildfire impacts.	Proposed Action: Fire Management Features
Herbicide	Concerned about using herbicide to manage invasive species.	Use careful well-timed grazing and hand labor to limit herbicides and manage invasives.	Use of mechanical and biological tools are prioritized for infestations that can managed effectively with them, depending on species, size of infestation, time of year, and in consideration of other resources present. Herbicides are an effective and appropriate tool for areas with large infestations that cannot be efficiently managed otherwise, along with certain species that are impervious to other methods of control.	Proposed Action: Invasive Species Management
Hydrology and Soils	The cumulative watershed effects (CWE) assessment is deficient and flawed.	The EA mistakenly contends that all project watersheds are currently below threshold and at low risk of adverse cumulative effects. "Given that the current (pre-project) level of CWE risk is low in most watersheds it is unlikely that the TOC will be exceeded in any of the analysis	The CWE "Recovery Coefficients" section in the hydrology report states, "Burned areas typically recover faster than areas of timber harvest - a five-year recovery period is applied to wildland fire, except in areas of very high soil burn severity." Refer to the Dixie Fire BAER report for	Hydrology Report

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
		watersheds under a more realistic implementation schedule of five to ten years.” EA, pg. 67. We could find no presentation of existing or projected values for equivalent roaded acres (ERA). Employing the ERA coefficients outlined in the hydrology report for calculation of ERA (0.30) disturbance coefficient for high severity wildfire, 0.15 for moderate wildfire, and a straight line recovery period of 25 years) we calculated an average pre-project ERA of about of 24% per watershed. This assumes three years of recovery, and that all subwatersheds burned with 50% moderate and 50% high severity. The calculation also assumes pre-fire ERA values of 4%, which we feel is likely an underestimate. We are not suggesting you employ these values in the analysis, they simply show that the ERA modeling done for the project (which states watersheds are currently below threshold and at low risk) is seriously flawed. Instead, it is reasonable to assume that pre-project ERA values in some subwatersheds are more than twice the threshold of concern (TOC). Watersheds with these levels of disturbance deserve special consideration.	more information on soil burn severity distribution. Soil transects were completed during the North Fork Recovery project analysis period, and good ground cover conditions (greater than 50%) were found, even in areas of high burn severity. Rapid vegetative recovery has also been observed, supporting the use of a 5-year recovery coefficient. Under the Proposed Action (Alternative 1), seventeen of twenty analysis watersheds are over the threshold of concern (TOC). As stated in the hydrology report, "The TOC serves as a yellow flag indicator of elevated risk for that watershed and warrants further consideration." However, under the analysis scenario, all project treatments were assumed to be implemented in 2024. Besides simplifying modeling, this approach has the benefit of providing an overestimate of effects, which can credibly serve as a conservative, worst-case scenario for analysis. In a real-world situation, actions are often completed over a decade or more. Under the most aggressive treatment scenario, natural recovery rates are projected to bring project watersheds back to below TOC by 2035. PNF agrees that some watersheds in the project area will require special consideration. Ultimately, the levels of disturbance by watersheds will depend on the pace of treatments as well as the timeline for post-fire recovery. As discussed in the EA and outlined in the accompanying Implementation Plan, watersheds modeled at high risk of CWEs will be further assessed for on-site conditions by Forest Service hydrologists and/or soil scientists, and additional mitigation measures may be developed where needed.	

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
Hydrology and Soils	The cumulative watershed effects (CWE) assessment is deficient and flawed.	The current analysis is focused on potential impacts from post fire increases to peak flows and their effects on channel stability. While this is of some concern, we believe that risks from increased sediment delivery, and the risk of debris flows in the post fire environment are the primary processes of concern in terms of cumulative watershed effects. The EA does not discuss impacts or risks related to these processes.	Three years after the Dixie Fire, the recovery of vegetation within the burn scar is a positive development that helps reduce the likelihood of debris flows. The Plumas National Forest recognizes that while the risk of debris flows still exists, the Burned Area Emergency Response (BAER) assessment indicates that this risk diminishes as natural regeneration progresses. As vegetation establishes and stabilizes the soil, it plays a crucial role in preventing erosion and mitigating the potential for debris flows. Potential for sediment delivery was assessed through the completion of field measured Erosion Hazard Rating. Through these assessments, effective ground cover in a sampling of high priority post-fire treatment locations was found to average 53% -- meeting the effective soil cover standard of 50%.	Hydrology Report
Hydrology and Soils	There is no cohesive approach to watershed recovery in the EA.	Highlight the degraded nature of these watersheds and prioritize the need for measures that might enhance or accelerate watershed recovery.	The scale of the NFFRP emphasizes the need for adaptability in natural resource management. The Environmental Assessment (EA) supports this by allowing proposed treatments to be aligned with current on-the-ground conditions after the decision is signed but before implementation. The hydrology analysis utilizes mid-scale and site-specific data to recommend a range of treatments aimed at achieving desired environmental conditions. This framework, which integrates expected environmental conditions with potential management activities, is central to the NEPA environmental analysis process. Once a decision is finalized, site conditions are assessed in specific locations to confirm suitability for the proposed management activities. If adjustments are necessary, they are made within the predefined range of analyzed management options and design features.	Hydrology Report

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
			A strategy for watershed recovery will be created following the NEPA process and prior to the start of any treatments, ensuring that management efforts are responsive to evolving environmental conditions and community needs.	
Hydrology and Soils	Discussion of road improvements is confusing and lacking in detail.	We were surprised to read in the hydrology section of the EA that 34 sites were identified for treatment. Figure 8 depicts where 15 of the sites are, but we don't know what treatments are proposed. It is also confusing to find this discussion in an EA section on effects analysis. Our recommendation is to apply improvements such that roads in the project area are brought up to at least standards included in the California Forest Protection Rules. This would mean constructing critical dips at stream crossings with diversion potential, and installing drainage such that crossing approaches to channels are typically no more than 100 feet, and in no cases greater than 200 feet. The desired condition of meeting or exceeding a 100-year flood standard (including bedload and debris) is simply not achievable for all crossings in the project area given even the most optimistic funding scenarios. There are no doubt hundreds of existing crossings in the project area. Based on analysis in other comparable subwatersheds on the PNF, the number currently meeting the 100-year standard is very low. We believe that applying a geographic area approach to the roads issue, as implied in the Implementation Guide to be an unsound. Road problems are not uniformly distributed, and the impact (or potential impact) of individual crossings on beneficial uses vary greatly. Rather, a small percentage of roads represent a vast majority of risk and impact. They should be prioritized for improvement. We recommend	The Plumas National Forest is committed to enhancing roads within the project area to meet or exceed the standards set by the California Forest Protection Rules. Priority will be given to improving road crossings after the NEPA process is completed. As noted, once the decision is finalized, site conditions will be assessed to ensure that the appropriate management activities are assigned based on current conditions. We updated the EA to include the statement discussing identified sites in the Proposed Action section, and reference to the Hydrology Specialists report for further detail, including the map depicting sites with a footnote clarifying all sites are noted on the map with some symbols representing multiple sites due to proximity. The approach to upgrading road crossings will be developed after NEPA and prior to actual implementation, although it falls outside the scope of this planning document. The Plumas National Forest recognizes the value of both making crossing improvements when needed for access to conduct other Project activities and through specific efforts to improve roads as highlighted in the comment.	Hydrology Report

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
		road crossing actions be based on a project-wide analysis of priorities. This would include risk of failure, along with assessment of values at risk and cost. In this way, a project-wide set of crossing improvement priorities could be established. Improvement could be made when the crossings were needed for access to conduct North Fork Project activities, or through specific efforts to improve roads.		
Hydrology and Soils	The EA's plan for Meadow and Stream improvement is deficient.	The EA contains what amounts to a laundry list of potential meadow enhancement practices. As with the discussion of roads, it suffers by not detailing where or what the treatments might be. If areas of reforestation, fuels reduction and fire breaks can be detailed, it is unclear why the same was not done for watershed improvements. More importantly, if seasonally flowing channels are included, it is likely that hundreds of miles of stream channels and the areas adjacent to them (RCAs) burned at high severity in the Dixie Fire. The channels and RCAs are key components of watersheds and the processes which impact fish habitat and beneficial uses. The EA is silent on both the condition of burned channels (with the exception of the 'functioning riparian corridors' observation noted earlier) and measures that might be undertaken to accelerate their recovery. In fact, our reading of the "Analysis of Riparian Management Objectives" (Hydrology and Soils Report, Appendix B) concludes that assumptions in the evaluation were that stream channels were unburned. The discussion there, or in the EA does not reflect current conditions of RCAs. It appears that because poor conditions are not recognized, measures to improve conditions were not considered. Unfortunately, options for such improvements are limited. One that certainly merits attention is large wood	As mentioned, the NFFRP emphasizes adaptability in its Environmental Assessment (EA), allowing proposed treatments to align with current on-the-ground conditions after a decision has been signed, but before implementation in specific units. The hydrology analysis utilizes mid-scale and site-specific data to suggest a range of treatments aimed at achieving desired ecological outcomes. Recovery actions in Riparian Conservation Areas (RCAs) are a priority for this project. The overlap between RCAs and reforestation units will facilitate the planting of trees in these critical areas, serving dual purposes: increasing tree density on the Forest and promoting the development of reusable woody material. The hydrology design features address this action, stating: "HYD-9: Determine retention levels of large down woody material on an individual site basis. Within westside vegetation types, aim to retain an average of 10-15 tons of large wood per acre within the treatment unit, when consistent with surface fuel objectives. Within eastside vegetation types, aim to retain at least three large down logs per acre, again when consistent with surface fuel objectives." Determining the conditions on the ground and identifying priority areas for implementation will	Design Features: Hydrological Resources

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
		distribution and large wood recruitment. Are there areas where addition of large wood might benefit channel function? Are there areas in RCAs suitable for reforestation where planting trees would accelerate the development of recruitable woody material? We reference RCO #3: "Ensure a renewable supply of large down logs that: (1) can reach the stream channel and (2) provide suitable habitat within and adjacent to the RCA." It is likely this objective is not met in most RCAs in the project area. Some project activities, namely fuels reduction would have watershed benefits by increasing ground cover. Assuming that not all areas planned for these treatments will be implemented due to lack of funding, there is a need to include benefits to watersheds in selecting priority areas for implementation.	occur after the planning phase, taking into account available funding, resources, and personnel. This ensures that recovery actions are effectively targeted and responsive to current environmental needs.	
Hydrology and Soils	Waste discharge that could affect the quality of the waters of the state.	Submit a report of Waste Discharge outlining the proposed discharges as well as a Notice of Intent (NOI) to the Central Valley Water Board.	Prior to implementation, the Plumas National Forest will communicate with the Central Valley Regional Water Quality Control Board and submit a Notice of Intent (NOI) for all applicable actions that require consultation under the General Order.	N/A
Hydrology and Soils	The EA does not mention the issue of Fish Passage.	The EA is essentially silent on the issue of Fish Passage. The FRTU Feather River Basin Assessment and Restoration Strategy (referenced earlier) found poor habitat connectivity in most Feather River Basin subwatersheds, including most of those in the Project Area. Most habitat fragmentation was due to road crossings. As far as we can see, the decision as whether to undertake fish passage projects is left to the hydrologist during implementation. There is no direction to implement AOP projects, or objectives to do so. We feel that in effect, this means no such projects would occur. Our recommendation is to include consideration of fish passage in the	The focus on road crossings will not be limited solely to fish passage; rather, the improvements will be guided by broader objectives related to overall ecosystem health and connectivity. While fish passage may be an important consideration in some cases, the primary goal is to enhance road functionality. If fish passage issues arise incidentally while addressing other objectives, they may be integrated into the planning process, but they will not be the sole driver of improvements. This holistic approach ensures that road upgrades support multiple ecological and management goals. This is referenced in the Environmental Assessment (EA) under "Transportation Treatment	Treatment Methods: Transportation

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
		schema to prioritize crossing upgrades recommended above.	Methods," which states: "Culverts sized to meet or exceed 100-year flood flows will reduce the likelihood of crossing failure and may facilitate aquatic organism passage."	
Hydrology and Soils	There should be buffer zones near water courses.	Buffer zones must be created alongside all water-courses to protect against sedimentation. Major streams and creeks should have a greater buffer than the smaller and intermittent streams and creeks. These smaller streams and creeks need a buffer zone irrespective of volume and seasonality.	During the implementation of the NFFRP, buffers will be established near watercourses to safeguard water quality. Design features aimed at minimizing sedimentation, as detailed in Appendix F, will guide these efforts. The objective is to maximize treatment effectiveness close to streams while ensuring that water quality is protected. By utilizing these design features, the project aims to balance necessary treatment activities with the preservation of sensitive aquatic environments, promoting both ecological health and effective resource management.	Hydrology Report
Implementation	Implementation prioritization	Prioritize WUI treatment over other Treatment Focus Areas	Communities and the WUI will be a priority for implementation within the North Fork Forest Recovery Project.	Purpose and Need
Implementation	Issues with the implementation plan and a lack of discussion about monitoring	We are concerned that a project of this scale and complexity includes so little in the way of monitoring. The EA should include a monitoring section so readers can evaluate it. While the lack of monitoring no doubt is a concern across numerous resources, we focus on those most directly related to fisheries habitat. There is mention of conducting BMP monitoring in the Hydrology-Soils Checklist in the Implementation Guide outline, but there is no indication of what activities would be monitored and the number of evaluations completed. The Guide also references "additional monitoring" (Step 7). As with comments below on the Implementation Guide, it is unclear why the ID Team could not identify monitoring needs in the EA. As stated in the Guide, any additional proposed monitoring not included in the NEPA	The Plumas National Forest will adhere to established monitoring guidelines to ensure effective oversight of project activities. We maintain a collaborative partnership with the water board to monitor herbicide use and its potential impact on waterways. Additionally, best management practices will encompass both prescribed fire and mechanical treatments, with a focus on monitoring their effects on nearby streams. This comprehensive monitoring approach aims to protect water quality and aquatic ecosystems while allowing for necessary management actions. As we implement the North Fork Forest Recovery Project on the Plumas National Forest, we are committed to actively responding to public input regarding both implementation and	Implementation Guide

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
		document is subject to line officer approval and may or may not be implemented. We feel this weakens the project. Regarding herbicide monitoring, the EA (Herbicide Use ID HU-15, pg. 215) calls for water quality monitoring to “document and provide early warning of hazardous conditions resulting from possible herbicide contamination of water...”. Monitoring at the time of application is important, and we agree with this objective. Broader scale monitoring of project streams for herbicides is also needed. The public is concerned about herbicide application, especially how it may impact water quality. Without appropriate surface water monitoring, it is impossible to assess the cumulative effectiveness of the considerable control measures designed to protect water quality and fish habitat. While the location and number of acres to be treated with herbicides is unclear, it is certain post Dixie fire applications on private lands in the project area will also occur, presenting an additive risk of contamination of streams in the project area. We believe that use of herbicides as a silvicultural tool requires responsible land managers to take necessary steps to demonstrate to the public that the approach to their application meets objectives for protecting water quality and instream and downstream uses. Results of such monitoring would be used to support protection measures, and if necessary, revise them. As alluded to earlier, we find numerous aspects of the Implementation Guide confusing or problematic. It is unclear what considerations will be used to select areas for treatment. Most of the criteria used to select these areas will be objective. If so, why aren't the criteria shared in the EA? Once NEPA is completed, there may be good intentions, but there will be no	monitoring needs. We will establish checkpoints and milestones throughout the project to gauge community feedback, ensuring that local voices are heard and integrated into the implementation process. This collaborative approach will enable us to incorporate community insights into our implementation and monitoring efforts, through community meetings, field tours, and other public engagement activities.	

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
		requirement for the public's wishes to be included in selecting areas for treatment.		
Implementation	Supporting local economies	Rather than prioritizing the development of campsites for recreation, we should focus on the use for burned timber, chips, small dimensional logs, etc. Recreation can be extractive.	This project will not involve the construction of new campsites. The proposed actions for existing campground improvements will include upgrades to infrastructure such as host sites, shower facilities, parking spurs, and restrooms. Additionally, wherever feasible, timber and biomass will be removed from the site and utilized by industry. This approach not only improves recreational amenities but also promotes sustainable management of forest resources.	Proposed Action: Recreation
Implementation	Supports the use of emergency authorities to expedite the implementation of this project.	Support the Forest pursuing emergency authorities to expedite the implementation of this project.	Under Forest Service NEPA regulations (36 CFR 220.4(b)(2)), the Chief or Associate Chief can authorize emergency actions when it's determined that they must be implemented before completing the standard NEPA analysis and documentation associated with a Categorical Exclusion or Environmental Assessment (EA) and Finding of No Significant Impact (FONSI). This process is distinct from alternative arrangements defined by the Council on Environmental Quality (40 CFR 1506.11). An emergency response has been authorized (September 2024) for specific actions within the North Fork Forest Recovery Project due to significant risks to human health, safety, and natural resources that require immediate attention. Delaying action until the standard NEPA process is completed would pose undue risks to the communities of Greenville and Taylorsville. In Greenville, CA, post-fire fuels reduction and site preparation for reforestation will take place on approximately 400 acres of land that	Purpose and Need: Emergency Authority

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
			experienced high-severity burns during the Dixie Fire. These treatment areas are adjacent to residences that survived the fire. The emergency actions include: 1. Removal of burned trees using manual and mechanical methods to mitigate fuels and hazards. 2. Reduction of competitive vegetation through mechanical and chemical treatments to support naturally regenerating conifer seedlings. If these actions are delayed, the burned trees will continue to deteriorate, creating unsafe working conditions for operators. The naturally regenerating conifers also face increased competition from rapidly reoccupying brush and heightened fire risk as standing dead trees begin to fall. Without timely removal of dead trees and competitive vegetation, these seedlings risk being outcompeted. Additionally, future tree planting cannot proceed until the hazards from standing dead trees are addressed. In Taylorsville, CA, forest thinning for fuels reduction and resilience will occur on approximately 300 acres in some of the last remaining green forest areas within the North Fork Forest Recovery Project planning area. While Taylorsville was spared from the severe damage of the Dixie Fire, the surrounding forest is at significant risk of wildfire. In compliance with 36 CFR 220.4(b)(2), these actions are not expected to have significant adverse environmental impacts (40 CFR 1501.3(b)), as outlined in the Draft EA (August 2024). The interdisciplinary team developed the proposed action with design features aimed at avoiding or minimizing potential adverse effects, ensuring that impacts remain below significant thresholds. These features include limited operating periods, equipment exclusion zones,	

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
			and standard protection measures for cultural and historic resources. Future emergency authorities may still be pursued in the North Fork Forest Recovery Project area, such as under the Western Firesheds Emergency Action Decision.	
Mining	Mining claimant access	Ensure continued access to sites for mining claimants; no new obstructions to mining claims.	To address concerns regarding mining claims, we have incorporated a design feature that ensures accessibility to valid and existing mining claims will be maintained. The proposed actions will be designed to avoid blocking access to these existing claims, thereby protecting the rights of claimholders while facilitating project implementation. This measure helps balance resource management with the needs of the mining community.	Design Features
NEPA	Given that the NFFRP is such a large project, with an extensive scope, it warrants an EIS.	Conduct an EIS.	NEPA requires that both context and intensity be considered when assessing the significance of actions. Context involves evaluating the significance of the North Fork Forest Recovery Project (NFFRP) in relation to the affected region, interests, and locality. Regarding intensity, the severity of impacts has been analyzed through specialist reports. While the NFFRP encompasses approximately 166,000 acres, the implementation of all proposed actions will span several years due to factors such as funding, capacity, and personnel availability. Importantly, none of the proposed actions are expected to adversely impact public health or safety. Mitigation measures have been designed to minimize impacts on wildlife, ensuring that actions will not affect endangered or threatened species or their habitats. Additionally, the project complies with all Federal, State, and local laws. Based on the comprehensive analysis	N/A

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
			conducted for the Environmental Assessment, no significant impacts were identified across the various resources considered. As a result, an Environmental Impact Statement (EIS) is not required.	
NEPA	Supports the Cultural Stewardship land designation	Extend the Cultural Stewardship lands to include Indian Head and or designate the area a Special Interest Area to complement the Homer/Deerheart Lake SIA on the LNF.	The Plumas National Forest and Sierra Institute staff are working with Tribal partners to designate areas for Cultural Stewardship, based on Tribal priorities and interests.	Cultural Stewardship
NEPA	Inadequate range of alternatives	Withdraw this project and redesign it to focus on defensible space pruning immediately adjacent to homes and key evacuation routes, while allowing prescribed fire and managed wildfire in forest wildlands instead of mechanical thinning.	Hand thinning and prescribed fire only does not align with the Purpose and Need of the project. To effectively reduce wildfire threats near communities and in dense, overstocked forest stands, it is necessary to implement mechanical treatments. These treatments aim to remove some mid-sized trees, thereby achieving stand densities that are more representative of historic fire regimes characterized by frequent, low to mixed severity fires. This approach is essential for enhancing forest resilience and reducing the risk of catastrophic wildfires.	Proposed Action - VDT
NEPA	Opposed to using an emergency authority	Opposed to PNF's intent for emergency authorization where mechanical thinning would occur. Limits public participation in the NEPA process. It has already been three years since the Dixie Fire -- if this was an emergency, work would have already happened.	Under Forest Service NEPA regulations (36 CFR 220.4(b)(2)), the Chief or Associate Chief can authorize emergency actions when it's determined that they must be implemented before completing the standard NEPA analysis and documentation associated with a Categorical Exclusion or Environmental Assessment (EA) and Finding of No Significant Impact (FONSI). This process is distinct from alternative arrangements defined by the Council on Environmental Quality (40 CFR 1506.11). An emergency response has been authorized (September 2024) for specific actions within the North Fork Forest Recovery Project due to significant risks to human health, safety, and natural resources that require immediate	Emergency Authority

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
			attention. Delaying action until the standard NEPA process is completed would pose undue risks to the communities of Greenville and Taylorsville. In Greenville, CA, post-fire fuels reduction and site preparation for reforestation will take place on approximately 400 acres of land that experienced high-severity burns during the Dixie Fire. These treatment areas are adjacent to residences that survived the fire. The emergency actions include: 1. Removal of burned trees using manual and mechanical methods to mitigate fuels and hazards. 2. Reduction of competitive vegetation through mechanical and chemical treatments to support naturally regenerating conifer seedlings. If these actions are delayed, the burned trees will continue to deteriorate, creating unsafe working conditions for operators. The naturally regenerating conifers also face increased competition from rapidly reoccupying brush and heightened fire risk as standing dead trees begin to fall. Without timely removal of dead trees and competitive vegetation, these seedlings risk being outcompeted. Additionally, future tree planting cannot proceed until the hazards from standing dead trees are addressed. In Taylorsville, CA, forest thinning for fuels reduction and resilience will occur on approximately 300 acres in some of the last remaining green forest areas within the North Fork Forest Recovery Project planning area. While Taylorsville was spared from the severe damage of the Dixie Fire, the surrounding forest is at significant risk of wildfire. In compliance with 36 CFR 220.4(b)(2), these actions are not expected to have significant	

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
			adverse environmental impacts (40 CFR 1501.3(b)), as outlined in the Draft EA (August 2024). The interdisciplinary team developed the proposed action with design features aimed at avoiding or minimizing potential adverse effects, ensuring that impacts remain below significant thresholds. These features include limited operating periods, equipment exclusion zones, and standard protection measures for cultural and historic resources.	
NEPA	The project does not use the best available science.	Use the best available science to inform the project.	The Environmental Assessment (EA) references a wide breadth of recent literature to inform the desired conditions for the landscape and the proposed actions within the project area. This body of research provides a scientific foundation for the project, ensuring that the management strategies align with current best practices and ecological understanding. By incorporating this literature, the EA aims to promote effective restoration and resilience in the landscape while addressing the specific needs of the ecosystem and surrounding communities.	References
Recreation	Visual and recreational aspects of the PCT	Maintain all design features in final decision as they relate to PCT, VQO, and REC	These design features will be retained.	Design Features
Recreation	Minimize the impact of new trails.	Motorized trails should not bisect the few remaining intact roadless areas on the Plumas National Forest, such as Inventoried Roadless Areas identified by the Forest Service or Citizen Inventoried Roadless Areas identified by The Wilderness Society. Trails proposed should comply with the Plumas County General Plan, and if motorized trails are proposed within Genesee Valley watershed the EA should analyze the impacts of noise on the Genesee Valley Special Management Area.	Inventoried Roadless Areas will not see the construction of any new motorized trails. Citizen Inventoried Roadless Areas, which have been proposed by a coalition of environmental groups advocating for the expansion of roadless regions, are not formally recognized by the Forest Service. It's important to note that these areas contain existing Forest Service roads. In response to this comment, the proposed Mt. Jura trail—originally planned as a motorized trail—will now be designated as non-motorized. We will also evaluate it for use by Class 1 e-bikes. This decision addresses noise concerns in the	Recreation, Designated Lands

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
			Genesee Valley Special Management Area and aligns with its management guidelines.	
Silviculture	Heavy equipment and herbicide use adjacent to private landowners property; near Heart K Ranch in Genesee	Use hand treatments on the hillside to the south of our ranch.	The North Fork Forest Recovery Project will implement key design features to protect private property from activities on Forest Service lands. Mechanical operations on steep slopes will be regulated, with skid trails designed to minimize soil disturbance and maintain ground cover to prevent erosion. Operations near Riparian Conservation Areas (RCAs) will be limited, safeguarding water quality and wildlife habitats. In the Wildland-Urban Interface (WUI) defense zone, equipment must operate with reduced turning and no side hilling to mitigate landslide risks. Before thinning on slopes greater than 35%, consultations with district hydrologists and soil scientists will assess geophysical properties and develop mitigation strategies. Mechanical operations would not occur when soils are wet and vulnerable to displacement and compaction. Buffer strips will be established along property boundaries to reduce noise and visual disturbance. Local stakeholders will be engaged for input and kept informed about project activities, with regular updates provided through community meetings and newsletters. These features aim to balance forest recovery efforts with the protection of private property, ensuring sustainable practices throughout the project.	Design Features
Silviculture	Site specific treatment that takes into account the forest stand, the slope, the presence of wildlife	Forest treatment should be site-specific. A blanket reduction of 40 to 60 percent canopy in PACs is not site specific enough. Forest cover	Silvicultural prescriptions and marking guidelines will be tailored to each stand and determined through on-the-ground reconnaissance of the subproject area. Key stand attributes, including aspect, slope,	Proposed Action, Wildlife Design Features

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
		should be studied and changed based on slope and the stand.	topography, moisture availability, and historical conifer species dominance, will be considered for accurate stand type designation. In terms of canopy cover in Protected Activity Centers (PACs), silvicultural treatments will retain a target of 40% to 60% residual canopy cover. These guidelines align with current California Spotted Owl (CSO) management direction from the US Fish and Wildlife Service and US Forest Service, ensuring that treatments support both ecological health and wildlife habitat needs.	
Silviculture	Use hand treatment when possible rather than mechanical treatment.	Most thinning should be done by hand crews to limit the negative impacts of mechanical equipment.	Hand thinning will be employed in areas where the impacts of mechanical equipment cannot be adequately mitigated, such as near streams, highly erodible soils, or sensitive areas like heritage control sites and wildlife habitats. However, hand thinning has limitations, as it often creates fuel piles that require burning later and restricts the size of trees that can be removed. This makes it less effective as a widespread tool for managing forest density compared to mechanical methods. Mechanical equipment can efficiently treat larger landscapes within a shorter time frame. Depending on the silvicultural prescription, this approach allows for the removal of excess fuels and trees offsite, reducing the need for subsequent treatments. The project includes design features aimed at mitigating any potential negative effects associated with the use of mechanical equipment, ensuring that ecological impacts are minimized while achieving management objectives.	Proposed Action - VDT

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
Silviculture	Limit reforestation and the use of herbicides; past reforestation efforts have not been effective.	Limit reforestation of conifers on the PNF because it has not worked in the past; this is not a good use of herbicides.	Reforestation prescriptions will be tailored to each site based on extensive field reconnaissance and verification, including the potential use of herbicides. Previous reforestation efforts in the Plumas National Forest have had mixed success, primarily due to restrictions on herbicide use. However, examples from adjacent private landowners demonstrate that post-fire reforestation can be effective when utilizing a variety of tools, including herbicide site preparation and release. The Plumas National Forest plans to adopt similar techniques to those that have proven successful on private lands. Reforestation efforts will be prioritized in areas where replanted forest stands are likely to persist over long timeframes. The goal is to ensure that forest structure and function align with both present and future climate conditions, taking into account predicted climate exposure and water stress. Replanted areas will be designed to foster individual tree growth and enhance stand-level resilience against future climate-related disturbances, such as wildfires and drought. The Plumas is dedicated to allocating resources strategically to maximize the success of its reforestation initiatives.	Proposed Action
Silviculture	Stand density of the forest	Reduce the stand density of the forest to pre-colonization conditions. Getting to this desired condition should include commercial logging.	Reducing stand density within forest stands is a proposed action within the North Fork Forest Recovery Project.	Purpose and Need
Silviculture	Protection of old growth and mature forest groves	Do not harvest old growth trees; do not harvest trees above 30 inches.	Silvicultural treatments and operations will carefully consider the presence of old growth, as defined by the reference document "Mature and Old-Growth Forests: Definition, Identification, and Initial Inventory on Lands Managed by the	Forest Plan Amendments

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
			Forest Service and Bureau of Land Management" (FS-1215a, April 2024, revised), applicable to Region 5. Silviculture treatments in identified old growth stands will maintain or enhance the characteristics that define the stand as old growth. Regarding the removal of trees over 30 inches in diameter at breast height (DBH), this will primarily pertain to the removal of true firs when it supports the growth of desired shade-intolerant, fire-adapted species, such as sugar pine. It is important to note that this does not grant blanket approval for the removal of all trees above 30 inches DBH; such actions will be undertaken judiciously and in alignment with management objectives aimed at enhancing forest health and resilience.	
Silviculture	Operations	This Project should set the limit to 50% slopes and up to 60% for short pitches. California State Law allows for ground-based harvesting on slopes up to 65% where the erosion potential is low to moderate. Advances have been made with modern equipment to minimize ground disturbance and compaction and should be allowed to perform unencumbered by standards put in place 36 years ago in the PNF Forest Plan. The use of tethered-assist equipment should also be considered for use in the Project that are >50% slope and in areas that are not suitable for traditional ground-based equipment.	The North Fork Forest Recovery Project EA does not specify a slope restriction for mechanical treatments. Instead, the feasibility of operations will be assessed on a case-by-case basis by the Forest Silviculturist and Hydrologists, taking into account the specific project site, slope, and other relevant factors. This collaborative approach allows for flexibility in management practices while ensuring that ecological considerations are prioritized.	Design Features
Silviculture	Overharvesting and thinning green forest stands.	Remove dead trees and protect remaining green forest stands; do not cut green trees.	Outside the burned areas within the project footprint, pre-fire ladder and surface fuels remain in overly dense remnant conifer stands. Although these stands survived previous wildfires with low to moderate severity, they are still at risk of future high-severity fires, particularly near high-severity burn patches or areas with excessive fuel loading.	Purpose and Need

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
			These surviving green stands are crucial as local seed sources for natural regeneration and contribute to species and structural diversity in the burned landscape, representing mid to late seral forests in an area that severely lacks such types. To enhance the forest's resilience against climate stressors and extreme climatic events, the project proposes thinning these green forest stands and implementing prescribed fire where feasible. This approach aims to improve the overall health and resilience of the forest for the future.	
Silviculture	Thinning is not helpful for community protection; USFS fails to address or acknowledge the large body of scientific evidence that green logging and post-fire logging exacerbates wildfires. USFS also improperly downplays and dodges science finding that thinning beyond about 100 feet from homes provides no additional protection from wildfire.	Limit commercial thinning and post fire thinning, and focus on defensible space.	The Forest Service strongly supports homeowners thinning vegetation within 100 feet of their homes, but this typically occurs on private property, where the Forest Service lacks legal authority to perform treatments. On Forest Service-administered lands, the latest scientific research indicates that properly implemented mechanical thinning, combined with treatments that reduce surface fuels, can effectively lower wildfire severity and intensity (Copeletta et al., 2024). Moreover, silvicultural treatments serve objectives beyond just fuel reduction. Historical evidence suggests that reducing stand densities enhances forest resilience against pests, diseases, and drought, while also promoting the growth of larger diameter trees (North et al., 2022). Dense, overstocked stands are particularly vulnerable to various stresses, leading to increased risks of insect infestations, disease outbreaks, and drought-related tree mortality. Thus, targeted thinning and management strategies are essential for improving forest health and resilience in the face of these challenges.	Proposed Action - VDT

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
Silviculture	Proposed canopy covers are too low; the target stand density index of 25% is a justification for logging	Increase the stand density index.	Recent literature (North et al., 2022) indicates that historic stand densities were approximately 25% of their theoretical maximum capacity. These lower densities provided sufficient resources for forested stands to better withstand wildfires, insects, diseases, and prolonged drought. It's also important to note that Stand Density Index (SDI) values vary by species and ecosystem. For instance, Eastside Pine has a different maximum SDI value and, consequently, different treatment objectives for resilience compared to White Fir. Silvicultural prescriptions and marking guidelines will be tailored to each stand and determined through on-the-ground reconnaissance of the project area. Key stand attributes—including aspect, slope, topography, moisture availability, and historical conifer species dominance—will be considered to ensure accurate stand type designation and effective management practices. This site-specific approach aims to enhance forest health and resilience in a targeted manner.	Proposed Action - VDT
Designated Lands	Highlight and characterize special lands better; diversify approaches to land management in these areas to protect the unique values of these areas.	Protect Wilderness Areas. Do not conduct mechanical thinning in Inventoried Roadless Areas. Do not conduct mechanical thinning in Citizen Inventoried Roadless Areas. Do not create new motorized routes in the Mt. Jura Citizen Inventoried Roadless Area. Take into account the Eligible Wild & Scenic Rivers in the project area.	There are no designated Wilderness Areas within the project area, and the project does not propose any mechanical treatments in Inventoried Roadless Areas. Citizen Inventoried Roadless Areas, which have been proposed by a coalition of environmental groups advocating for the expansion of roadless regions, are not currently recognized by the Forest Service. Additionally, many of these proposed areas contain existing Forest Service roads. The Plumas National Forest will recognize Eligible Wild & Scenic Rivers as designated Wild & Scenic Rivers. For example, Eligible Wild Rivers	Designated Lands

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
			will have a 0.25-mile exclusion zone established for mechanical thinning to protect their ecological integrity. This approach ensures that sensitive areas are preserved while allowing for necessary management actions in other parts of the project area.	
Designated Lands	Highlight and characterize special lands better; diversify approaches to land management in these areas to protect the unique values of these areas.	Consider Special Interest Areas and provide special consideration for populations of California pitcher plant --limit mechanical thinning in Special Interest Areas.	Darlingtonia californica is on the Plumas National Forest (PNF) Watchlist and is actively managed for protection by the forest. While the BA/BE does not mandate an analysis of effects for Watchlist species—many of which are also included in the California Rare Plant Rank (CRPR) listings—the PNF has established management prescriptions for this and other species. These species are surveyed, mapped, and protected in accordance with these guidelines, ensuring that their habitats are preserved during project implementation. This proactive approach underscores the commitment to biodiversity and the conservation of sensitive species within the forest.	Botany, Designated Lands
Wildlife	Opposed to Forest Plan Amendments, particularly as they relate to the protection of California Spotted Owls.	Remove Forest Plan Amendments from the document.	This project has been designed to align with the existing Forest Plan direction, as amended by the proposed project-specific Forest Plan amendments (see Appendix B: Project-Specific Forest Plan Amendments and Substantive Requirements). The existing Forest Plan (as amended by the Sierra Nevada Forest Plan Amendment, 2004) provides guidance for managing various resources and wildlife habitats, including the management of trees >30 inches in diameter, California spotted owl and American (northern) goshawk Protected Activity Centers (PACs), and California spotted owl Home Range Core Areas (HRCAs). These proposed Forest Plan Amendments align the proposed action with the Conservation Measures described in the Programmatic Biological	Forest Plan Amendments

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
			Assessment for Ca. spotted owls, and are consistent with the Regionally developed standardized approach for Forests across the range of the species. Many address language changes and analysis differences between the SNFPA and the PBA, based on the 2019 Conservation Strategy. This includes moving away from HRCAs, and utilizing Territories; increasing treatments within suitable habitat to increase wildfire resilience; and increasing heterogeneity within CSOW habitat. Incorporating a variety of recent literature and resources, including the 2019 California Spotted Owl Conservation Strategy, the project reflects updated scientific recommendations for managing wildlife habitats. The proposed Forest Plan amendments aim to address new best available science in light of overstocked forest conditions, climate change, and recent catastrophic wildfires, ensuring that management practices remain effective and relevant to current ecological challenges.	
Wildlife	Salvage logging impacts to wildlife, including black-backed woodpeckers	Reconsider the vast and cumulative extent of proposed salvage logging, particularly in large high severity burn patches. Preserving these areas is crucial for the black backed woodpecker. Other species benefit from post fire environments also, including mountain bluebird, western tanager, olive-sided flycatcher, hairy woodpecker, and the white-headed woodpecker.	Historically, the project area was characterized by a frequent, low to mixed severity fire regime, where only 5-15% of conifer forests would be expected to burn at high severity, resulting in more than 75% basal area loss (Mallek et al., 2013). However, recent large fires in the Plumas National Forest (PNF)—including Minerva, Camp, Walker, Sheep, North Complex, Dixie, and Sugar—have resulted in approximately 50% of conifer forests burning at high severity. During these events, over 203,000 acres in the PNF were affected by large high-severity patches greater than 100 acres. While eliminating surface and ladder fuels in these high-severity patches may reduce the risk	Purpose and Need

Resource	Project Concern	Commentor's Recommendation	Plumas National Forest Response	Reference
			of reburn for a short period, fire-killed trees that remain standing contribute to ladder fuel loading across the burned landscape. This accumulation, combined with near-term shrub growth, creates a buildup of dead and live fuels that are at high risk of re-burning at high severity. Such conditions can hinder future fire suppression efforts and diminish the potential for natural conifer regeneration. Therefore, there is a critical need to manage post-fire fuels and reestablish forest cover within these extensive high-severity burn patches to prevent further forest loss on the landscape and promote ecological recovery. Vast areas across the forest, including within the project area, will not be subject to reforestation efforts in an attempt to conserve habitat for fire dependent species, and to increase heterogeneity within the project area.	