



[PROPERTY NAME]

FOREST MANAGEMENT PLAN TEMPLATE

VERSION 1

Contents

1. Introduction & Property Overview	2
2. Landowner & PROPERTY Information	3
3. Property History & Legacy	5
3.1 Property History.....	5
3.2 Family Legacy.....	5
4. Management Goals & Objectives	6
5. Property Setting & Conditions	7
5.1 Property Infrastructure.....	7
5.2 Physiographic Setting	11
5.3 Biological Resources	14
5.4 Air Quality	19
5.5 Archaeology & Cultural Resources	19
6. Proposed Vegetation Management	19
6.1 Vegetation Types	19
6.2 Summary of Treatment Types Proposed	21
7. Climate Considerations & Assessment Of Beneficial Practices	21
7.1 Introduction to Forest Carbon	21
7.2 Current Forest Structure & Carbon Stocks	22
7.3 Assessment of Potential Carbon Beneficial Practices.....	22
8. Constraints & Proposed Alternatives	31
8.1 Operational Constraints.....	31
8.2 Proposed Alternatives	31
8.3 Economic Sustainability.....	31
9. Planned Management Activity	32
9.1 Management Activity Schedule & Tracking.....	32
9.2 Carbon Beneficial Activity Summary.....	33
9.3 CEQA & NEPA Information & List of Required Permits	34
9.4 List of Potential Funding Sources for Project Implementation	35
9.4 List of Additional Professional Assistance	36
10. References.....	37
11.	A
ppendices.....	37

1. INTRODUCTION & PROPERTY OVERVIEW

This plan is designed to assist the landowner in identifying goals and objectives to actively manage their forested property to create a healthy, resilient forest. The purpose of this plan is to identify opportunities and related practices, currently in use or recommended for implementation, that meet and further the landowner's goals for the property.

This template is intended to be a guide for the landowner and their technical specialist (RPF, RCD Staff, TSP, etc.) to utilize in the collaborative process of inventorying the property, including features such as vegetation types, watercourses, and road system, documenting conservation practices that are currently used, and helping the landowner to identify all opportunities to manage a healthy, resilient forest. The resulting plan is intended to be a working document to inform and record the landowner's decisions and progress. Lastly, the plan will provide the landowner with an easy to reference summary of conservation practices that they use and that they intend to implement.

Maps are an important part of a forest management plan and serve as an easy reference for the landowner and technical service provider. All maps contained in this plan should be prepared using a topographic map, an aerial photograph, or a Google Earth image as a base map. Scale must be a minimum 4 inches = 1 mile or 1:15,840 scale. More than one map will be used to display the information in the plan. A more detailed map may be needed to accurately depict stream channels, riparian corridors, or other small-scale features. Each map should have a legend and should clearly display the features that are identified in the plan.

Maps to be included in this plan are:

1. Property Vicinity Map
2. Property Improvements Map
3. Forest Road and Erosion Control Points Map
4. Fire Management Map
5. Watercourse Map
6. Soils Map
7. Vegetation Map and/or Management Unit Map
8. Archaeology and Cultural Resource Map (if applicable)
9. Planned Management Activities Map

Use this section to briefly introduce the property. Provide a brief description of the property, its size, location, and where it is accessed from. Include a vicinity map and the separate Assessor's Parcels, if necessary. Additionally, state the purpose of the plan.

2. LANDOWNER & PROPERTY INFORMATION

Landowner			
Name			
Mailing Address			
City, State & Zip Code		Phone (home)	
E-mail		Phone (cell)	

Landowner's Representative (if applicable)			
Name			
Mailing Address			
City, State & Zip Code		Phone (home)	
E-mail		Phone (cell)	

Lead Plan Preparer			
Name			
Preparer's Affiliation			
Plan Sections Prepared	<input type="checkbox"/> All Sections: <input type="checkbox"/> Some (specified below)		
E-mail		Phone	Fax

Other Contributing Plan Preparer(s)			
Name			
Preparer's Affiliation			
Plan Sections Prepared	Plan Sections Contributed to (List Sections):		
E-mail		Phone	Fax

Management Plan History	
<i>Complete this section if there is an existing Forest Management Plan or other plan for the property. Check all that apply. Past plans and current amendments should be attached in Appendix K.</i>	
<input type="checkbox"/> CFIP Forest Management Plan <input type="checkbox"/> Fire Management Plan <input type="checkbox"/> Forest Stewardship Plan <input type="checkbox"/> EQIP Forest Management Plan <input type="checkbox"/> Conservation Easement <input type="checkbox"/> Other (list) <input type="checkbox"/> Conservation Activity Plan (CAP) <input type="checkbox"/> Non-Industrial Timber Management Plan (NTMP)	
Date of Original Plan Completion	
Revision Date(s)	

Property Facts			
Legal Property Description (Township, Range, and Section)			
Nearest City or Town			
County			
Assessor's Parcel Numbers (APN)			
Tract and Farm Number (if suitable)			
GPS Coordinates	Latitude	Longitude	
Total ownership acreage		Total forested acreage	
Does landowner reside on the property?	<input type="checkbox"/> Yes <input type="checkbox"/> No		

Topography	
<i>Describe the overall topography of the property, including slope, aspect, and elevation.</i>	
Elevation Range	
Estimated percent of total acreage that is:	
Simple topography (few ravines and changes of aspect)	
Flat (< 5% slopes)	
Gentle (5 - 35% slopes)	
Steep (> 35% slopes)	

Transportation System	
Vehicle Access (check the one that most closely describes access over the entire property)	<input type="checkbox"/> Excellent (80% accessible) <input type="checkbox"/> Good (at least 50%) <input type="checkbox"/> Fair (at least 25%) <input type="checkbox"/> Poor (less than 10%)
Estimated paved road length	
Estimated improved road length (rock surfaced roads)	
Estimated unimproved road length (native surfaced roads)	

Watershed Information	
Water Board Region(s) http://www.waterboards.ca.gov/waterboards_map.shtml	
CALWATER 2.2 planning watershed http://frap.fire.ca.gov/data/frapgismaps/frapgismaps-calwaterdownload	
Acres within this watershed	
303d listing on watershed <input type="checkbox"/> Yes <input type="checkbox"/> No TMDL Factors (list)	

3. PROPERTY HISTORY AND LEGACY

3.1 Property History

Use this section to discuss past management history, including past timber harvest (include THP number for sales after 1970), conservation practices (include those completed under public incentive agreements, such as EQIP and CFIP cost-share programs), and catastrophic events. Information in this section is based on personal knowledge from the landowner, neighbors and other parties, property records, and local information sources, as well as evidence seen on the ground from stumps, skid trails, etc.

Questions to discuss can include, but are not limited to: What is known about the property prior to current ownership? What land management practices have taken place on the property? What forest stands have been harvested and at what rotation? What is the current management strategy?

The table below provides a guide to outline past land use activities on the property.

Land Use Activity	Area (acres)	Current	Past	Notes (include timeframe)
Timber Production		<input type="checkbox"/>	<input type="checkbox"/>	
Firewood Production (identify personal or commercial)		<input type="checkbox"/>	<input type="checkbox"/>	
Forested Open Space/Undeveloped		<input type="checkbox"/>	<input type="checkbox"/>	
Non-forested Open Space/Undeveloped		<input type="checkbox"/>	<input type="checkbox"/>	
Grazing/Rangeland		<input type="checkbox"/>	<input type="checkbox"/>	
Paved Areas and Buildings		<input type="checkbox"/>	<input type="checkbox"/>	
Pond/Reservoir (footprint)		<input type="checkbox"/>	<input type="checkbox"/>	

3.2 Family Legacy

Use this section to describe the landowner's future plan for the property regarding family legacy and succession. Options for succession planning include:

<input type="checkbox"/> Include property in landowner's will or trust	<input type="checkbox"/> Conservation Easement
<input type="checkbox"/> Gift or sell forest to heirs prior to passing	<input type="checkbox"/> Other:
<input type="checkbox"/> Create a legal business structure for the forest (Limited Liability Company, Family partnership, etc.)	

More information on succession planning can be found in the Spring 2011 edition of Forestland Steward (<http://calfire.ca.gov/foreststeward/pdf/news-spring11.pdf>).

4. MANAGEMENT GOALS & OBJECTIVES

These goals should reflect what the landowner is trying to accomplish on their property and should be identified in collaboration with the landowner. Property goals and objectives are used to identify management strategies and practices for accomplishing the landowners' goals as well as to help them identify any goals that might conflict with each other. Goals are general statements of the landowner's vision, and objectives are the measurable actions taken to reach those goals.

Use this section to describe the property's goals and identify the objectives that will be used to achieve them. Property goals can be divided into three categories: production, quality of life, and forest health. The table below will aid in identification of landowner goals and objectives.

Production/Business
<input type="checkbox"/> Family legacy: pass on the property to the next generation
<input type="checkbox"/> Timber production
<input type="checkbox"/> Other natural resource production (e.g., mushroom gathering, fire wood, biochar, etc.)
<input type="checkbox"/> Livestock management
<input type="checkbox"/> California Compliance Offset Program (note: generally, very capital intensive to participate)
<input type="checkbox"/> Other:
Quality of Life
<input type="checkbox"/> Family legacy: pass on the property to the next generation
<input type="checkbox"/> Address trespass concerns, particularly in regards to environmental degradation from trespass cannabis grows and/or off-highway vehicle effects on soil and water quality
<input type="checkbox"/> Increase and/or maintain aesthetics of the property
<input type="checkbox"/> Other:
Forest Health
<input type="checkbox"/> Wildfire protection and fuel load reduction/promote fire resilient forest
<input type="checkbox"/> Prevent and/or control insects and/or disease (list)
<input type="checkbox"/> Increase stocking (e.g., reforestation; list species)
<input type="checkbox"/> Increase species diversity (list preferred species)
<input type="checkbox"/> Increase growth/promote large diameter trees
<input type="checkbox"/> Manage forest roads to reduce movement of sediment into streams and other water bodies
<input type="checkbox"/> Reduce erosion of streambanks and gullies
<input type="checkbox"/> Increase quality of wildlife habitat (list species and/or habitat characteristics)
<input type="checkbox"/> Maintain or enhance oak woodland, native grassland, or other plant communities
<input type="checkbox"/> Manage to increase tree cover and/or ground cover in riparian areas or along streams
<input type="checkbox"/> Increase quality of in-stream aquatic habitat
<input type="checkbox"/> Reduce/manage invasive weeds
<input type="checkbox"/> Manage for climate resilient forests and long-term carbon storage
<input type="checkbox"/> Other:

5. PROPERTY SETTING & CONDITIONS

5.1 Property Infrastructure

PROPERTY IMPROVEMENTS

Use this section to discuss existing improvements, including residences and outbuildings, roads and access, fencing, gates, water improvements (such as springs, water tanks, stock ponds, troughs, and wells), powerlines, etc. Include a map of these improvements.

FOREST ROADS

Describe the property's road system, including major skid trails. Identify the length (feet or miles) of road by surface type. Discuss stream crossings and drainage improvements. Include in discussion if existing culverts and other crossings are adequately sized for 100-year storm events. Describe current road maintenance for erosion reduction, road surface condition, weed control, and time-of-year (seasonal) use.

Identify possible access and road location improvements, including stream, wetland, and pond impacts due to road issues. Identify any erosion control points and briefly describe field observations and treatment recommendations. Describe conservation practices for general maintenance, erosion reduction, road surface condition, drainage-dips, culverts, stream crossings, weed control, and time-of-year use. All recommended replacement culverts must be sized for 100-year storm events. The table below may be used to organize identified erosion control points (ECPs) and describe their condition and recommended treatment. This table may be placed in Appendix B if desired.

Table 5-1: Road Treatment Recommendations for Erosion Control Points

Field observations and treatment recommendations for road related erosion control point (ECP) features. Include photos of ECPs if desired.

ECP #	Treatment Priority	Problem Type	Comment on Problem	Recommended Treatment
	<input type="checkbox"/> High <input type="checkbox"/> Medium <input type="checkbox"/> Low	<input type="checkbox"/> Stream Crossing <input type="checkbox"/> Road Drainage <input type="checkbox"/> Cut/Fill Issue <input type="checkbox"/> Road Surface		

Map existing road locations and improvement areas, including watercourse crossings and other needed drainage improvements. Identify road surface type and season of use. At a minimum, all truck roads and Class I and Class II crossings must be mapped.

The following table provides an assortment of management practices that are intended to upgrade existing roads and reduce potential sediment delivery to watercourses. Selection of practices must be done on a site-specific basis. NRCS Practice Titles are provided for landowner reference. Contact your local NRCS or RCD field office for technical and/or possible financial assistance. For more

information about proper road construction and maintenance, download the *Handbook for Forest, Ranch & Rural Roads* at <http://mcrd.org/>.

Table 5-2: Road Related Conservation Practices

Conservation Practice	NRCS Practice	Current Practice	Planned Implementation Date	Location
Use native surfaced roads as seasonal roads only – avoid use when soils are saturated		<input type="checkbox"/>		
Place rolling dips, water bars, and other drainage features at appropriate spacing to get water off road surface quickly.		<input type="checkbox"/>		
Chemical treatment on unpaved roads to prevent particulate matter emissions from vehicle use, keeping soil on the road.	Dust Control on Unpaved Roads (373)	<input type="checkbox"/>		
Install or replace an undersized or eroded culvert at stream crossings.	Stream Crossing (578)	<input type="checkbox"/>		
Install or replace a bridge so stream flow is not impeded.	Stream Crossing (578)	<input type="checkbox"/>		
Decommission unnecessary or eroding roads, trails, or landings, to allow footprint to return to production. May include recontouring and/or re-vegetating area.	Road/Trail/Landing Closure and Treatment (654)	<input type="checkbox"/>		
Grade and/or reshape roads to allow for proper surface drainage and decrease the risk of compaction and sedimentation.	Forest Trails and Landings (655); Access Road (560)	<input type="checkbox"/>		

Vegetate exposed cut banks or fill slopes to decrease the rate of erosion.	Critical Area Planting (342)	<input type="checkbox"/>		
Other:		<input type="checkbox"/>		

ACCESS AND SECURITY

Discuss how property boundaries are identified, including fences, gates, and boundary and corner markers. Discuss any trespass problems and potential forms of control, such as additional fencing, gating, signing, and other forms. Provide contact information for local protection agencies.

Review how current property management interacts with neighboring properties and identify any future recommendations.

RECREATION AND AESTHETICS

Use this section to discuss the aesthetic qualities of the property.

Discuss current and potential recreational opportunities for the property, including hiking, hunting, fishing, etc. Include any applicable supporting resources (e.g., link to CDFW's Private Lands Management Program: <https://www.wildlife.ca.gov/hunting/plm>).

LIVESTOCK MANAGEMENT (if applicable)

Discuss current and/or future livestock management plan(s). Identify where on the property livestock are managed. Describe the overall condition and apparent trend of the property's rangeland. Describe the current grazing regime. Identify areas that might benefit from a change in grazing regime. Include discussion of any environmental issues that are a result of livestock management and propose mitigation management recommendations.

The following table provides an assortment of management practices that are intended to assist in the sustainable management of livestock on the property's rangelands. Selection of practices must be done on a site-specific basis. NRCS Practice Titles are provided for landowner reference. For a more detailed inventory of rangelands and livestock management practices, contact the local NRCS or RCD office about completing a LandSmart® Rangeland Plan.

Table 5-3: Livestock Management Related Conservation Practices

Conservation Practice	NRCS Practice	Current Practice	Planned Implementation Date	Location
Establish and maintain permanent vegetative cover	Conservation Cover (327)	<input type="checkbox"/>		
Monitor for Residual Dry Matter		<input type="checkbox"/>		
Management of grazing animals to improve available forage	Prescribed Grazing (528)	<input type="checkbox"/>		
Favor perennial grasses and increase pasture production	Range Management/Prescribed Grazing (528)	<input type="checkbox"/>		
Increase forage production by seeding into existing vegetation	Range Planting (550)	<input type="checkbox"/>		
Fencing to divide pastures for rotational grazing	Fencing (328); Access Control (472); Prescribed Grazing (528)	<input type="checkbox"/>		
Additional water for livestock	Water Development (516, 614)	<input type="checkbox"/>		
Restore degraded areas	Pasture Planting (512); Range Planting (550)	<input type="checkbox"/>		
Establishment of trees in grazed grassland or thin appropriate forested areas to facilitate the establishment of native grasses.	Silvopasture (381)	<input type="checkbox"/>		
Conduct soil analysis for organic matter nutrient and organic matter status	Nutrient Management (590)	<input type="checkbox"/>		
Other:		<input type="checkbox"/>		

FIRE MANAGEMENT

Describe and discuss local fire history and potential for future fires on the property using both local knowledge and CAL FIRE's Fire and Resource Assessment Program ("FRAP") data. Existing maps and spatial data may be found online at: <http://frap.fire.ca.gov/data/frapgismaps-subset>. Comment on the type of fuels present in excess that increases wildfire hazards and pose a risk to human safety, structures, plants, animals, and air resources.

Discuss the current fire protection and management measures occurring on the property. Describe and discuss potential sources of fire ignition, existing fuel hazards, and infrastructure for protection. Identify the existing and potential water sources for fire suppression, including wells, drafting ponds, and water tanks. Additionally, map roads and identify evacuation routes and access for emergency vehicles, including locked gates and potential helicopter landings zones. Refer to mapping standards in Section 1 of the template. Map these features and provide a copy of the map to the local emergency service agencies (e.g., CAL FIRE and local fire departments) along with landowner and land manager contact information.

Fuel reduction projects and conservation practices will be discussed in Section 7.3, Fuel Reduction.

5.2 Physiographic Setting

DESCRIPTION OF WATERSHED

Provide a brief description of the watershed in which the property is located. Include a description of the watershed's climate, including temperature and precipitation ranges in the area.

STREAMS, PONDS, AND WATER QUALITY

Describe water resources present on the property, including streams and their classification, wetlands, and ponds. Identify the length (miles or feet) of each type of stream classification and current or desired riparian buffers. Discuss any water quality issues and how management decisions on the property, or neighboring properties, are affecting the water resources. Map all water features on the property.

Table 5-4: Watercourses Present on the Property

Watercourse Classification	Channel Length	Riparian Buffer Width	Notes (e.g., species present, seasonality, etc.)
Class I			
Class II			
Class III			

Discuss conservation practices to improve water quality, as well as riparian and wetland habitat. The following table provides an assortment of management practices that are intended improve and protect water quality. Selection of practices must be done on a site-specific basis. NRCS Practice Titles are provided for landowner reference. Contact your local NRCS or RCD field office for technical and/or possible financial assistance.

Table 5-5: Water Quality Related Conservation Practices in Addition to Road Related Work

Conservation Practice	NRCS Practice	Current Practice	Planned Implementation Date	Location
Establish permanent vegetation on degraded and exposed areas.	Critical Area Planting (342)	<input type="checkbox"/>		
Enhance and protect existing wetlands on the property to retain permanent vegetative cover.	Wetland Enhancement (659)	<input type="checkbox"/>		
Construct sediment basin on disturbed areas to capture excessive sedimentation delivered to watercourses.	Sediment Basin (350)	<input type="checkbox"/>		
Improve riparian zone to maintain or enhance the beneficial functions of a riparian buffer.	Riparian Herbaceous Cover (390); Riparian Forest Buffer (391); Stream Bank & Shoreline Protection (580)	<input type="checkbox"/>		
Stabilize eroding stream banks	Stream Bank & Shoreline Protection (580)	<input type="checkbox"/>		
Upgrade roads to limit sedimentation	See Table 5-2	<input type="checkbox"/>		
Other:		<input type="checkbox"/>		

SOILS

Describe and map the soil types found within the property. Soil information may be found using the USDA Natural Resources Conservation Service's Web Soil Survey, found at:

<https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>.

Soil descriptions should include site index and or site classes, estimated growth/acre/year, erosion hazard ratings, and any equipment limitations. Additionally, address the soil unit's level of organic matter and available water holding capacity. Soil reports including these factors may be downloaded from the Web Soil Survey.

Map the soil units occurring on the property and any known geological hazards and landslides. Place supporting NRCS Soil Survey Geographic Database report and any other available ecological site descriptions in Appendix C.

If necessary, discuss conservation practices for steep slopes, woody debris retention, nutrient cycling, vehicle travel, soil compaction, flood runoff, and/or livestock issues. Briefly address soil quality concerning current soil organic matter depletion, compaction, and available water holding capacity using the following criteria if any of the following issues are observed:

- a. Soil organic matter is not adequate to provide a suitable medium for plant growth, animal habitat, and soil biological activity.
- b. Soil compaction is prevalent on the property outside of landings, truck roads, and skid trails that results in decreased rooting depth and thus plant growth and other biological activities.
- c. Natural precipitation is not optimally managed to support desired land use goals. For example, a past clear cut on a south facing slope now only supports a brush field as soil moisture was no longer sufficient to support conifer growth due to lack of shade post-harvest. Identify practices that minimize runoff, encourage infiltration, control evapotranspiration and minimize evaporation losses.

Discuss conservation practices to improve soil quality in forestland. The following table provides an assortment of management practices that are intended improve and protect water quality. Selection of practices must be done on a site-specific basis. NRCS Practice Titles are provided for landowner reference. Contact your local NRCS or RCD field office for technical and/or possible financial assistance.

Table 5-6: Soil Quality Related Conservation Practices

Conservation Practice	NRCS Practice	Current Practice	Planned Implementation Date	Location
Reforest areas currently barren or dominated by brush, if ecologically appropriate, to create forest canopy and increase water holding capacity.	Tree/Shrub Establishment (612); Tree/Shrub Site Preparation (490)	<input type="checkbox"/>		
Minimize number of passes by heavy equipment to reduce soil compaction and soil disturbance.		<input type="checkbox"/>		
Do not operate heavy equipment when soil is saturated to reduce potential soil compaction.		<input type="checkbox"/>		

If conducting timber harvests, use cable logging systems on steep slopes.		<input type="checkbox"/>		
Retain low levels of slash for nutrient cycling.		<input type="checkbox"/>		
Place slash or reseed large areas where bare mineral soil is exposed.		<input type="checkbox"/>		
Other:		<input type="checkbox"/>		

5.3 Biological Resources

FISH AND AQUATIC RESOURCES

Identify fish bearing streams and note any streams with anadromous fish or listed fish species, as well as other significant aquatic species that utilize the water resources and riparian areas on the property. Contact a local California Department of Fish and Wildlife biologist for assistance in creating a list.

Describe the general condition of the aquatic habitat present on the property. Include particular detail on fish habitat, including large woody debris (“LWD”), pools and other rearing habitat, riffles and other spawning conditions, riparian cover, migration barriers (if present), and the current or desired riparian buffer widths.

Discuss potential fish and aquatic habitat improvement, including water quality and quantity, as well as riparian habitat and promoting its beneficial functions:

- a. Water temperature control.
- b. Streambed and flow modification by large woody debris.
- c. Filtration of organic and inorganic material.
- d. Upslope stability.
- e. Bank and channel stabilization.
- f. Spawning and rearing habitat for salmonids.
- g. Vegetation structure diversity for fish and wildlife habitat, possibly including but not limited to:
 1. Vertical diversity
 2. Migration corridor
 3. Nesting, roosting, and escape
 4. Food abundance
 5. Microclimate modification
 6. Snags
 7. Surface cover

Use the California Natural Diversity Database (“CNDDDB”) dataset for state and federally listed rare, threatened, or endangered aquatic species within at least three miles of the property boundary. Use RareFind to query listed species by USGS quadrangle. A general rule of thumb is to query for the nine

quads surrounding the property. Fewer quadrangles may be queried if justifiable; for example, exclude quads that only contain habitats substantially different than that of the property. The BIOS Viewer allows you to view CNDDDB data spatially, and is especially helpful in creating maps of known locations of rare, threatened, or endangered species. More information may be found at:

<https://www.wildlife.ca.gov/Data/CNDDDB>.

Use the table below to list aquatic species found in the property's vicinity. More detailed information about specific species may be placed in Appendix C.

Table 5-7: List of Aquatic Species Found in the Property's Vicinity

Species	Listing Status
<i>Anadromous Fish</i>	
<i>Freshwater Fish</i>	
<i>Reptiles</i>	
<i>Amphibians</i>	

Discuss conservation practices to improve aquatic habitat. The following table provides an assortment of management practices that are intended improve and protect aquatic habitat, including water quantity and quality. Selection of practices must be done on a site-specific basis. NRCS Practice Titles are provided for landowner reference. Contact your local NRCS or RCD field office for technical and/or possible financial assistance.

Table 5-8: Wildlife Habitat Related Conservation Practices

Conservation Practice	NRCS Practice	Current Practice	Planned Implementation Date	Location
Plant native riparian species to improve riparian habitat to retain shade and decrease stream bank erosion.	Riparian Herbaceous Cover (390); Riparian Forest Buffer (391)	<input type="checkbox"/>		
Increase forest vegetation to increase upslope stability.	Tree/Shrub Establishment (612); Tree/Shrub Site Preparation (490)	<input type="checkbox"/>		
Fence riparian areas to keep livestock from	Fencing (382)	<input type="checkbox"/>		

browsing riparian species and eroding stream banks.				
Strategically place large woody debris in stream channels to create fish rearing and spawning habitat.		<input type="checkbox"/>		
Remove fish barriers.		<input type="checkbox"/>		
Other:		<input type="checkbox"/>		

UPLAND WILDLIFE RESOURCES

Describe the general condition of habitat and the habitat elements present on the property, such as den sites, snag retention, downed wood, migration corridors, and water sources. Discuss potential habitat improvements, such as access, nest boxes, water development, and domestic animal control. Additionally, discuss the habitat needs for wildlife within the property's vicinity and recommend practices that promote these types of habitat characteristics.

Additionally, the California Wildlife Habitat Relationships ("CWHR") may be used to classify habitat types on the property, if different from already identified forest vegetation types. More information and descriptions of each defined habitat type may be found at:

<https://www.wildlife.ca.gov/Data/CWHR/Wildlife-Habitats>.

Use the table below to list the CWHR types found on the property if different than identified vegetation types in Section 5.3.

Table 5-9: California Wildlife Habitat Relationship Types Found on the Property

Habitat Type	Approximate Percentage of Total Property

Identify any bird and other non-aquatic animal species observed or known to be present on or within the vicinity of the property. Discuss any mitigation measures for species found on the property, such as limiting operating periods and nesting buffer zones. Contact a local California Department of Fish and Wildlife biologist for assistance in creating a list.

Use the California Natural Diversity Database ("CNDDDB") and the Spotted Owl Observations dataset for state and federally listed rare, threatened, or endangered species within at least three miles of the property boundary. Use RareFind to query listed species by USGS quadrangle. A general rule of thumb is to query for the nine quads surrounding the property. Fewer quadrangles may be queried if justifiable; for example, exclude quads that only contain habitats substantially different than that of the property. BIOS Viewer allows you to view CNDDDB and Spotted Owl data spatially, and is especially helpful in

creating maps of known locations of rare, threatened, or endangered species. More information may be found at: <https://www.wildlife.ca.gov/Data/CNDDB>.

Use the table below to list upland wildlife species of note that are found, or may be found, on the property. More detailed information about specific species may be placed in Appendix C.

Table 5-10: List of Upland Wildlife Species Found in the Property's Vicinity

Species	Listing Status
<i>Mammals</i>	
<i>Birds</i>	
<i>Insects</i>	

Discuss conservation practices to improve upland wildlife habitat. The following table provides an assortment of management practices that are intended improve or create wildlife habitat. Selection of practices must be done on a site-specific basis. NRCS Practice Titles are provided for landowner reference. Contact your local NRCS or RCD field office for technical and/or possible financial assistance.

Table 5-11: Wildlife Habitat Related Conservation Practices

Conservation Practice	NRCS Practice	Current Practice	Planned Implementation Date	Location
Improve riparian habitat	Riparian Herbaceous Cover (390); Riparian Forest Buffer (391)	<input type="checkbox"/>		
Reforest areas that were historically forest stands	Tree/Shrub Establishment (612); Tree/Shrub Site Preparation (490)	<input type="checkbox"/>		
Remove unnecessary fencing that may inhibit wildlife passage or convert to wildlife friendly fencing.		<input type="checkbox"/>		
Remove and/or girdle conifers and other evergreen tree species encroaching on deciduous oak woodlands.	Forest Stand Improvement (666); Restoration and Management of Rare or Declining Habitats (643); Brush Management (314)	<input type="checkbox"/>		

Radially thin around individual dominant trees to encourage the growth of wolfy characteristics.	Forest Stand Improvement (666)	<input type="checkbox"/>		
Construct nesting or perching structures for wildlife.	Structures for Habitat (649)	<input type="checkbox"/>		
Girdle trees for snag creation and/or invasive tree removal.	Brush Management (314)	<input type="checkbox"/>		
Other:		<input type="checkbox"/>		

RARE, THREATENED, AND ENDANGERED PLANT SPECIES

Use the California Native Plants Society's ("CNPS") Rare and Endangered Plant Inventory list for rare, threatened and endangered plant species found within at least three miles of the property boundary. Lists may be queried by USGS quadrangles. Additionally, the *Rare and Endangered Plant Field Guide for Timber Harvest Plans in Coastal Mendocino County* may be used for forest types found in Mendocino County. The Guide can be downloaded at <http://mcrcd.org/>. Use Table 5-12 to list the species found in the property's vicinity. Break out species by plant type and list the general habitat(s) in which they are found.

Table 5-12: Rare, Threatened, and Endangered Plant Species Found in the Property's Vicinity

Species	Rare Plant Rank	Habitat
Discuss any mitigation measures for species found on the property.		
Annual Herb		
INVASIVE PLANT SPECIES		
Fruticose Lichen (epiphytic)		
Discuss any invasive species found on the property and the current eradication measures. Discuss prevention guidelines, including how to inventory, control, and monitor infestations. Describe the range of integrated pest management tools, such as mechanical, manual, biological, cultural (e.g., prescribed burning, grazing, etc.), or chemical treatment.		
Perennial Evergreen Shrub		
Perennial Herb		
Perennial Rhizomatous Herb		

5.4 Air Quality

Discuss how unwanted vegetation is currently treated or removed from the property. Discuss smoke management issues with prescribed fire and pile burning, and described unwanted biomass removal alternatives (e.g., utilize material for energy production, firewood, construction, etc.).

Identify greenhouse gas emitting activities that take place, or will potentially take place, on the property. These include, but are not limited to, pile burning, broadcast burning, practices that include fossil fuel combustion engines. Discuss how greenhouse gas emissions are managed to reduce potential impacts. Furthermore, list air quality entities and permit requirements for practices involving burning. Additional information on county outdoor burning programs should be included in Appendix D.

5.5 Archaeology and Cultural Resources

Include landowner information about known archaeological, cultural, or historical sites along with location maps. If available, attach existing record checks, surveys, or Confidential Archaeological Report(s) in Appendix I.

Provide guidelines on how proposed practices might affect, or be affected by, observed or known sites. Provide mitigation practices to protect those sites. Furthermore, inform the landowner about the process of “discovery” or survey for unknown sites and discuss possible mitigations that should occur if ground disturbing events are prescribed in the future.

6. PROPOSED VEGETATION MANAGEMENT

6.1 Vegetation Types

Provide a brief description of each vegetation type found on the property. Include the approximate acreage and percent of the total property it occupies.

If possible, break the property into logical forest management units. These are stands that will be managed the same way, and may be delineated by vegetation/stand breaks or physical barriers, such as streams, roads, and ridges.

Provide a map of the property’s vegetation stands and/or management units, if different than the stratified vegetation types. Use the following tables to aid in the description of each forest vegetation type and their prevalence on the property.

Table 6-1: Vegetation Types Found on the Property

Vegetation Type	Acres	Percent of Property

For each vegetation type or management unit, provide a general description of the current condition followed by unit objectives and management recommendations.

Consider discussing the following:

- Stand history, age (for unevenage stand note approximate age of overstory) and desired rotation cycle
- Tree species present, forest type and/or ecological site description
- Site index, soil type, elevation, slope
- Growth/yield potential
- Regeneration and stand improvement needs

If applicable, identify other, non-timber related resources of note within the management unit and reference significant and specific mitigation measures in relevant sections elsewhere in the plan.

These resources may be:

- Riparian, meadows, aquatic habitat, stream and other watercourses
- Understory, downed woody debris, snags, wildlife habitat
- Erosion concern
- Domestic uses
- Other conservation issues

Further detailed inventory plot data should be included, if taken. Forest modeling outputs may be included with each unit description if available. Use the tables below to describe stand composition for each vegetation type or management unit. Information should come from property inventory.

Table 6.2: Stand Composition Summary

Species	TPA	BA (sq. ft./acre)	Merchantable Volume/acre (MBF)
ALL			

Diameter Class	TPA	BA (sq. ft./acre)
2		
4		
6		
8		
10		
ALL		

6.2 Summary of Treatment Types Proposed

List and summarize treatment types recommended by this plan for easy landowner reference. Include short descriptions of specific treatment units, if not already identified in Section 6.1. These treatment activities may include:

Fuel Reduction Treatments

Reforestation and/or Afforestation

Timber Harvest

Pre-commercial Thinning/Release

Prescribed Burning

Cone Collection

Identify areas where cone collection is appropriate. This may be collecting cones from genetically superior individual trees, or an array of preferred species. Seed storage is beneficial to preserve local genetics and have site specific seed on hand for future reforestation projects.

7. CLIMATE CONSIDERATIONS & ASSESSMENT OF BENEFICIAL PRACTICES

7.1 Introduction to Forest Carbon

Forest grow and store large quantities of carbon dioxide, a greenhouse gas and the most abundant driver of global climate change. Young, rapidly growing forest can sequester a remarkable amount of carbon dioxide, while older forests stores carbon over generations. The California Forest Carbon Plan (CFCP Draft, 2017) identifies forestland as the largest land-based carbon sink in the state, but recent trends and long-term evidence suggest that certain forests may become a source of overall net greenhouse gas (GHG) emissions if actions are not taken to manage forests in a way to enhance their potential to sequester carbon. Climate change impacts California's forests with more frequent and severe wildfires, pests, disease, increased temperatures, and changes water availability. These effects may decrease forest growth, and thus decrease rates of carbon sequestration, as well as result in forests lost to wide-spread tree mortality, increasing rates of GHG emissions.

Due to past forest management, particularly fire suppression, many forests are currently unhealthy, with unnaturally dense stands making them more susceptible to drought, disease, insect pests, and uncharacteristically large, severe wildfires (CFCP Draft 2017). These events result in massive amounts of dead trees that are no longer removing carbon from the atmosphere and will continue to emit greenhouse gasses for decades as they decay. The vegetation that replaces the trees that have died will not compensate for the carbon loss for decades.

In the face of climate change, as temperatures increase and extended droughts are likely to be more common, researchers found that forests actively managed for resilience were better able to sustain their current carbon sequestration rates under significantly hotter and drier conditions than unmanaged stands (CFCP Draft 2017). As a result, how forests are managed has a significant effect on the atmosphere. Forest stand treatments should be aimed at reducing current stocking of small-diameter, fire sensitive trees to fewer, larger diameter trees, creating forest more resistant to stand replacing disturbances, creating a resilient carbon storage pool.

7.2 Current Forest Structure and Carbon Stocks

Use Table 7-1 to show the property's current carbon stocks on forestland by forest type or management unit as of the current inventory year. Inventory data should be included in Appendix B. Use inventory to calculate above ground biomass and estimated carbon pools. Note if estimated carbon pools are above and below ground or above ground only. To do this, use growth and yield models (such as FVS or FORSEE).

Table 7-1. Current estimated live, dead, and total carbon stores for forestland on the property.

Forest Type or Management Unit	Total Acres	Above Ground Biomass (ccf/acre)	Estimated Carbon Pools (MT C/acre)		
			Live	Dead	Total
ALL					

ccf = hundred cubic feet

7.3 Assessment of Potential Carbon Beneficial Practices

This assessment includes the following forest health related greenhouse gas (GHG) reducing activities (check all that apply):

- ☐ Reforestation
- ☐ Pest Management
- ☐ Fuels Reduction
- ☐ Forest Conservation
- ☐ Biomass Utilization

It is noted that forest carbon pools always decrease immediately after vegetation treatment activities (e.g., thinning, prescribed burning, and harvesting) and modeling suggests they remain lower decades

beyond treatment date (Clark et al. 2011; North et al. 2009). This is due to the reduction in total biomass present on the landscape when stocking is reduced. If the vegetation removed during thinning and fuel reduction treatments could be utilized, either as lumber or biomass energy production, the emissions associated with these activities can be reduced. Additionally, all vegetation treatment activities create carbon emissions, but emissions can be reduced and future carbon stocks increased by reducing surface fuels, small and intermediate sized trees, and fire-sensitive species on the landscape (North et al. 2009). The goal of vegetation treatments in terms of GHG benefit would be to move carbon stocks from many small, fire-vulnerable trees into large, disturbance-resilient trees. By leaving crowded stands unmanaged, the existing carbon stocks are highly vulnerable to catastrophic loss from large-scale disturbances, such as high-intensity fire and outbreaks of insects or disease.

For the purpose of this assessment, net GHG benefit will be calculated using the California Air Resources Board (ARB) quantification methodologies, found online at:
<https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/quantification.htm>.

REFORESTATION

The reestablishment of forests after large-scale disturbances, such as high-intensity wildfire, will offer important ecosystem services for a variety of important natural and social reasons. Best management practices suggest reforestation activities establish a diverse, native forest, which will result in stable carbon sequestration rates and storage, restore watershed functions, and result in a resilient forest. Replanting a disturbed site with trees to create a future forested stand sequesters much more carbon than a brush field, which is often the result of leaving the site to natural succession. The net GHG benefit of reforestation can be calculated as follows:

Net GHG Benefit = Δ in standing live and dead tree carbon stocks in the treatment boundary – carbon in shrubs and herbaceous understory removed from treatment boundary – mobile combustion emissions from site preparation

It is important when planting seedlings to plant species that will thrive in the planting location. The seed used to grow seedlings for reforestation should be from the local area or tree seed zone¹ that is compatible in terms of latitude and elevation.

Identify and discuss areas within the property that are understocked and desired for regeneration practices with specifications for natural seedling recruitment, site preparation, planting, and/or follow-up treatments (e.g., grubbing to reduce competition). To promote nutrient cycling, reduce GHG emissions from pile burning, and minimize soil disturbance, mastication should be considered for site preparation as opposed to tractor piling, where possible. Tractor piling includes the skidding or raking of woody material into piles to burn. Mastication shreds woody debris in place, creating a layer of shredded material that helps protect the top soil horizons by providing a mat for the masticator to drive on. If tractor piling is necessary for the site, limit skid trails to the extent possible to minimize soil

¹ California forest tree seed zones were established to aid in the planting of trees from seed that is adapted to the planting site conditions (e.g., climate, elevation, latitude and longitude) to increase the likelihood of survival.

disturbance, compaction, and subsequent diminished site productivity. Describe the area to be improved, including practice specifications for fire protection, thinning, pruning, and future regeneration.

The following table provides an assortment of management practices that are intended to sequester carbon and reduce GHG emissions that result from leaving areas unmanaged after a large-scale disturbance. Implementation of all practices is not necessary or required. Selection of practices must be done on a site-specific basis. An assortment of practices to suit the property's circumstance should be selected. NRCS Practice Titles are provided for landowner reference. Contact the local NRCS or RCD field office for technical and/or possible financial assistance.

Table 7-2: Reforestation Related Conservation and Carbon Beneficial Practices

Conservation Practice	NRCS Practice	Current Practice	Planned Implementation Date	Location
Plant Conifer and/or Hardwood Seedlings	Tree/Shrub Establishment (612)	<input type="checkbox"/>		
Prepare area for planting (e.g., reduce existing vegetation that will compete with planted seedlings)	Tree/Shrub Site Preparation (490)	<input type="checkbox"/>		
Restore riparian plant communities by planting native woody species	Riparian Forest Buffer (391)	<input type="checkbox"/>		
Maintenance treatments: Grubbing of competing vegetation		<input type="checkbox"/>		
Pre-commercial thinning to required future stand density	Forest Stand Improvement (666)	<input type="checkbox"/>		
Other:		<input type="checkbox"/>		

PEST MANAGEMENT

Tree mortality from native bark beetles, pathogens, and cycles of drought are part of the natural forest ecosystem in many California forests. Historically, conifer mortality associated with bark beetles and severe moisture stress was the most significant widespread effect on vegetation (CFCP Draft, 2017). However, recent drought and warmer temperatures have intensified this mortality. Trees stressed by inadequate moisture levels have their normal defense systems weakened to the point that they are highly susceptible to successful insect attacks by bark, engraver, and wood-

boring beetles. This stress is exacerbated in areas with high tree density as trees are constantly competing for limited resources making them very susceptible to high levels of mortality. Forest thinning can control both light and moisture competition, in addition to removing suppressed trees that are more susceptible to insects and disease. Thinning improves tree vigor, reduces a tree's susceptibility to successful insect attack, and lowers the potential for severe fire. The California Forest Carbon Plan Draft (2017) states that thinning forest vegetation is the most effective management tool for reducing bark beetle-caused tree mortality. Thinning prescriptions will be determined by the RPF and will be based on site specific stand conditions and landowner objectives. Without active treatment, stands will remain overcrowded and unhealthy. Restoring forest structure back to fewer, widely spaced large-diameter trees from dense stands of small-diameter trees has been demonstrated to lessen bark beetle outbreaks under current climate conditions and provides the best opportunity to minimize outbreaks under a more strenuous climate (CFCP Draft 2017).

Thinning treatments improve forest health by reducing pest-related mortality, improving tree growth, stabilizing carbon retained in trees, and increasing overall forest resilience. Forest thinning activities implemented should change stand structure to increase carbon storage in more widely-spaced trees that are more resistant to insect attacks, in addition to wildfire and drought. Treatments should focus on removing dead, diseased, stagnant, or slow-growing trees. The net GHG benefit from thinning treatments to reduce pest mortality can be calculated as follows:

Net GHG Benefit = Δ in standing live tree carbon stocks in the treatment and impact boundaries as a result of reduced mortality from pests and disease – carbon in biomass removed from treatment boundary – mobile combustion emissions from mechanical treatments

Discuss any insects, pathogens, or invasive animals, known and/or potential, affecting individual trees or forest health found on the property or that are known to effect trees in similar forest types and stand conditions. Discuss prevention guidelines, including how to inventory, control, and monitor infestations. Describe the range of integrated pest management tools, such as mechanical, manual, biological, cultural (e.g., prescribed burning), or chemical treatment. Discuss how appropriate stocking with little competition provides for vigorous trees and a resilient forest stand.

The following table provides an assortment of management practices that are intended to stabilize sequestered carbon by changing forest stand structure to increase carbon storage in more widely-spaced trees that are more resistant to pest attacks. Implementation of all practices is not necessary or required. Selection of practices must be done on a site-specific basis. An assortment of practices to suit the property's circumstance should be selected. If possible, utilize woody material removed for either wood products or energy production. NRCS Practice Titles are provided for landowner reference. Contact your local NRCS or RCD field office for technical and/or possible financial assistance.

Table 7-3: Pest Management Related Conservation and Carbon Beneficial Practices

Conservation Practice	NRCS Practice	Current Practice	Planned Implementation Date	Location
Thin small-diameter trees in the understory (manual or mechanical removal)	Forest Stand Improvement (666)	<input type="checkbox"/>		
Harvest merchantable trees in the understory and/or overstory, capturing future mortality and storing carbon in wood products		<input type="checkbox"/>		
Radially thin around vigorous trees of desired species to reduce individual tree competition	Forest Stand Improvement (666)	<input type="checkbox"/>		
Treat/remove residual woody material that is created due to management activities or natural disturbances to reduce insect brooding habitat and the risk of outbreak	Woody Residue Treatment (384); Obstruction Removal (500)	<input type="checkbox"/>		
Other:		<input type="checkbox"/>		

FUEL REDUCTION

As temperatures are projected to increase and precipitation to subsequently decrease throughout the next century due to climate change, wildfires are expected to increase in severity compared to historic conditions (Mallek et al. 2013). Additionally, the length of fire season will likely increase (Westerling et al. 2006). With the estimated increase in area burned over by wildfires and no change in present management, wildfire GHG emissions, including combustion and subsequent decay of residual dead woody material, are estimated to increase, as well. Moreover, the CFCP Draft (2017) states that recent observations suggest that a portion of high severity burn areas may not regrow as forestland, and instead transition to shrub or grasslands.

Due to decades of fire suppression, California's forests have seen an increase in stem density, with fewer very large diameter trees, reducing the total live tree carbon stocks relative to historic stands and shifting a higher proportion of these stocks into small diameter, fire-sensitive trees (North et al. 2009).

Fuel reduction treatments improve forest resiliency by reducing wildfire severity and related mortality, improving tree growth, and stabilizing carbon retained in trees. Thinning activities implemented should change stand structure to concentrate carbon storage in more widely-spaced trees that are more resistant to wildfire, drought, and insect attack, and reduce the likelihood of wildfire transitioning into the forest canopy. All treatments should focus on treating understory trees and/or brush to reduce surface and ladder fuels, disrupt both vertical and horizontal continuity of vegetative fuels. The net GHG benefit from fuel reduction activities can be calculated as follows:

Net GHG Benefit = Δ in standing live tree carbon stocks in the treatment boundary and impact boundary (optional) as a result of reduced mortality from wildfire – carbon in biomass removed from treatment boundary – mobile combustion emissions from mechanical treatments

FVS may be used to model fire in both a treated vs untreated scenario (see ARB quantification methodology). It is suggested that wildfire events be modeled as if they take place during the peak of fire season (late summer) when fuel moisture levels are very dry, temperatures are at the upper end of the average range for the location, and assuming wind speeds of 25 miles per hour².

Use this section to discuss the value of shaded fuel breaks and other forest fuel treatments, and the value and potential of connecting with neighbors for a community based fuel break effort. Identify potential fuel and fire break locations (generally along roads and ridges) and the possibility of reintroducing prescribed fire onto the property. Discuss fire protection practices and specifications for mechanical hand work, herbicide application, and/or prescribed fire for stand and habitat improvement, fuel reduction, and firefighter safety in the event of a wildfire. When possible, material generated from thinning treatments should be utilized as wood products or energy production. Limiting skid trails will reduce the overall compaction of soil and impact on soil productivity.

The following table provides an assortment of management practices that are intended to stabilize sequestered carbon by changing forest stand structure to increase carbon storage in more widely-spaced trees in a more fire resilient stand. Implementation of all practices is not necessary or required. Selection of practices must be done on a site-specific basis. An assortment of practices to suit your circumstance should be selected. NRCS Practice Titles are provided for landowner reference. Contact the local NRCS or RCD field office for technical and/or possible financial assistance.

² Daugherty and Fried (2007) use 20-foot wind speeds of 25 mph as the threshold for a potential stand-replacing fire. Using FVS, if a stand had either a torching index or crowing index of ≤ 25 mph, then they assume the stand is at risk of a stand-replacing fire.

Table 7-4: Wildfire Hazard and Fuels Reduction Related Conservation and Carbon Beneficial Practices

Conservation Practice	NRCS Practice	Current Practice	Planned Implementation Date	Location
Thin small-diameter trees and remove brush in the understory to remove surface, ladder, and/or canopy fuels (manual or mechanical removal)	Shaded Fuel Break (383); Forest Stand Improvement (666)	<input type="checkbox"/>		
Prune the residual stand of trees and shrubs to reduce vertical fuel continuity (6-15' high)	Tree/Shrub Pruning (660)	<input type="checkbox"/>		
Remove conifers and other evergreen tree species encroaching on deciduous oak woodlands to reduce fuels and promote more fire resilient species	Forest Stand Improvement (666); Restoration and Management of Rare or Declining Habitats (643)	<input type="checkbox"/>		
Harvest merchantable trees in the understory and/or overstory, increasing spacing between crowns and capture future mortality and storing carbon in wood products		<input type="checkbox"/>		
Radially thin around vigorous trees of desired species to reduce torching potential of individual trees	Forest Stand Improvement (666)	<input type="checkbox"/>		
Prescribed broadcast burning of forest stands and/or brush fields to consume surface and ladder fuels		<input type="checkbox"/>		

Creation of a permanent or temporary strip of bare or vegetated land (herbaceous species) planned to retard fire	Fire Break (394)	<input type="checkbox"/>		
Treat/remove residual woody material that is created due to management activities or natural disturbances to reduce surface fuels	Woody Residue Treatment (384)	<input type="checkbox"/>		
Management or removal of woody brush species to reduce surface and ladder fuels	Brush Management (314)	<input type="checkbox"/>		
Other:		<input type="checkbox"/>		

FOREST CONSERVATION

Protecting forestland from conversion to non-forest land uses maintains existing carbon stored onsite in forest vegetation and ensures the site will continue to sequester carbon in perpetuity. Conservation easements are a tool that can prevent conversion and protect the property's associated resources. The easement is either voluntarily donated or sold by the landowner and constitutes a legally binding agreement that limits certain types of uses or prevents development from taking place on the land in perpetuity while the land remains in private hands.

Furthermore, conservation easements can contain forest improvement terms, such as requirements to grow large trees and retain some, or all, of them over time. Conservation easements can protect both forestlands that are managed for timber harvest and those that are not. Conservation easements protect land from conversion and fragmentation while allowing owners to retain many private property rights and to live on and use their land, at the same time potentially providing them with direct financial and/or tax benefits.

The net GHG benefit from forest conservation can be calculated as follows:

Net GHG Benefit = Δ in standing live and dead tree carbon stocks in the treatment boundary as a result of avoided conversion

Use this section to discuss feasibility and landowner interest in pursuing a conservation easement for the property, if one is not currently in place. Additionally, list land trusts and other organizations that work in the area that may be interested in purchasing a conservation easement on the property. The Forest Legacy Program, administered by CAL FIRE, may also be referenced (http://www.calfire.ca.gov/resource_mgt/resource_mgt_forestryassistance_legacy). If one already

exists on the property, use this section to reference land management requirements identified in the easement.

Table 7-5: Forest Conservation Related Conservation and Carbon Beneficial Practice

Conservation Practice	NRCS Practice	Current Practice	Planned Implementation Date	Location
Conservation easement on forested land.		<input type="checkbox"/>		
Other:		<input type="checkbox"/>		

BIOMASS UTILIZATION

To maximize the net GHG of forest vegetation activities, the material should be utilized and the emission accounting should include the carbon stored in wood products produced. Woody biomass may be utilized for wood products (e.g., lumber, engineered wood, etc.), which allows for continued carbon storage, or to generate energy to displace fossil fuel-based energy sources.

Diversion of small-diameter and other non-merchantable material from open pile burning, the traditional method of on-site disposal, to be used as renewable energy and fuels at biomass power generating facilities reduces both the GHG emissions from fossil-fuel based energy sources and emissions from pile burns. Furthermore, this non-merchantable material may be converted to compost or biochar that retains more carbon in the product to slowly release into the soil carbon pool.

In addition to energy production from small diameter material, harvesting merchantable timber has multiple carbon benefits. Timber harvests have the potential to decrease horizontal and vertical continuity of forest fuels and reduces competition, creating a more disturbance resilient forests (see Section 6.2 (B) for benefits of pest management and Section 6.2 (C) for benefits of fuels reduction). The additional carbon benefit of harvesting merchantable timber comes from the utilization of the harvested wood. Traditional lumber and engineered wood products can displace other construction materials, such as bricks, concrete, and metals, which have higher lifecycle GHG emissions (CFCP Draft 2017). Furthermore, utilization of timber products captures future mortality and sequesters it for the lifetime of the building products. Wood products do decay over time; however, decomposition is slow.

The net GHG benefit from biomass utilization can be calculated as follows:

Net GHG Benefit = Carbon stored long-term in wood products + avoided emissions from fossil fuel-based energy displaced by biomass energy – stationary combustion emissions from biomass energy production + avoided emissions from alternative form of biomass disposal

Table 7-6: Biomass Utilization Related Conservation and Carbon Beneficial Practice

Conservation Practice	NRCS Practice	Current Practice	Planned Implementation Date	Location
Timber Harvest Plan, Exemption, or Non-industrial Timber Management Plan operation implemented		<input type="checkbox"/>		
Biomass removed taken to energy production facility.	Obstruction Removal (500)	<input type="checkbox"/>		
Other:		<input type="checkbox"/>		

8. CONSTRAINTS & PROPOSED ALTERNATIVES

8.1 Operational Constraints

List and discuss any key factors of forest management that constrain the potential forest management operations on the property. Common operational constraints are:

- Steep slopes
- Low merchantable timber volumes
- Operating season due to wet weather periods coupled with limiting operating periods due to wildlife nesting/breeding seasons
- Limited market for timber products due to current economic conditions, mill locations, and lack of facilities utilizing small diameter wood (e.g., biomass facilities, engineered wood facilities, etc.)

8.2 Proposed Alternatives

List land use alternatives to the current uses and landowner objectives. At a minimum, discuss the desired alternative, including a cost/benefit analysis of property improvement investments, and the “no action” alternative.

If a growth and yield model was used in the preparation of this plan (e.g., Forest Vegetation Simulation (FVS), Forest and Stand Evaluation Environment (FORESEE), Stand Projection System (FPS), etc.), generated results of the alternative selected should be attached in Appendix I.

8.3 Economic Sustainability

Discuss any future harvest plans, market conditions, and a brief economic assessment of proposed management treatments. Discuss the value of a business plan and potential resource development.

9. PLANNED MANAGEMENT ACTIVITY

9.1 Management Activity Schedule and Tracking

Schedule proposed activities in an orderly timeline covering at least five years. Use this table to track implementation of the actions that identified in this plan. Additional pages can be added as needed to adequately document all practices that are planned. Provide a project map delineating each treatment.

Treatment Unit	Apprx. Acres	NRCS Practice Code	Treatment Activity Short Description	Dates		Cost Share Type	Net per Acre Cash Flow*		
				Planned	Comp.		Approx. Total Cost	Approx. Cost Share	Approx. Income

* Costs are based on the most current NRCS practice scenario cost list. These costs are based on a national average and actual costs for landowner projects will vary by location and contractor selection.

9.2 Carbon Beneficial Activity Summary

List planned climate beneficial practices and their corresponding net greenhouse gas benefit. Greenhouse gas (GHG) reducing activities are those identified in Section 6.3. Identify which management units are climate beneficial practices on the project map.

Treatment Unit	Appx. Acres	GHG Reducing Activity Category	Current Practice	Proposed Management Prescription	Estimated On-Site Carbon at End of Project* (MT C/acre)				Net GHG Benefit (MT CO ₂ e)	Date	
					Baseline		w/ Treatment + Stored C or Avoided Emissions if Applicable				
					No Disturbance	With Disturbance	No Disturbance	With Disturbance		Plan	Comp

* End of Project is determined by site class for the management unit the activity will take place (as defined by ARB for GGRF quantification methodology)

Site Class I = 50 years

Site Class II and III = 60 Years

Site Class IV and V = 80 years

9.3 CEQA and NEPA Information and List of Required Permits

Forest management activities including conservation practices may impact special environmental and/or cultural values such as threatened or endangered species and archaeological sites. Environmental and cultural reviews by regulatory agencies are required when a ground practice is proposed, and a permit and/or government assistance becomes part of the project.

Most commercial biomass and timber removal activities need a CAL FIRE permit or other entity permit. Identify the need or current CAL FIRE THP, NTMP, and/or Categorical Exclusion for proposed timber management activities. All commercial treatments must comply with the California Forest Practice Act.

Other agency permits may be necessary for proposed management activities related to other types of conservation projects such as, but not limited to, water drafting, ponds, road maintenance, crossing replacements and upgrades, and dust control. Identify the required permits needed for any proposed treatments. Furthermore, discuss both proactive and required monitoring for regulatory compliance.

Any future projects funded by a CAL FIRE or NRCS cost-share program requires a CFIP Environmental Checklist (CEQA) or an NRCS CPA-52 (NEPA) Checklist to satisfy CEQA or NEPA, respectively. Along with this checklist a process of “discovery” or survey for unknown values along with a discussion of possible mitigations is required. Additionally, the checklist must be filled out by an RPF or Certified Planner. Archaeological values require an Archaeological Records Check from the California Historical Resources Information System (“CHRIS”), an entity Archaeologist review, and Native American notification for the practice area.

Before a ground disturbing project is initiated, it is suggested that a project notification to the following agencies:

- a) County Clerk
- b) California Department of Fish and Wildlife
- c) North Coast Regional Water Quality Control Board
- d) Native American Heritage Commission
- e) Tribal contacts within Mendocino County

Projects affecting the bed, bank, or channel of a stream or other water body, notify the Department of Fish and Wildlife, the Regional Water Quality Control Board, and Army Corps of Engineers. Projects may require a permit. Your local Resource Conservation District may also be available to assist with permit applications.

For harvesting activities removing commercial timber, a CAL FIRE permit is needed to comply with the California Forest Practice Act. For treatments recommended in this plan, identify needed or current CAL FIRE THP, NTMP, and/or Categorical Exclusions for the proposed timber management activities.

9.4 List of Potential Funding Sources for Project Implementation

List and briefly describe any potential funding and/or cost-share programs the landowner may apply for to implement recommended projects. Below are commonly available programs.

USDA Natural Resource Conservation Service (NRCS) provides cost share funding assistance for forest practice and road related projects through the following program:

The Environmental Quality Incentive Program (EQIP) provides financial and technical assistance to agricultural producers and forest landowners in order to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, reduced soil erosion and sedimentation or improved or created wildlife habitat.

CAL FIRE provides cost share funding assistance for forest stand improvement projects and other vegetation treatments through the following programs:

California Forest Improvement Program (CFIP): The purpose of the CFIP program is to encourage private and public investment in, and improved management of, California forestlands and resources. This focus is to ensure adequate high quality timber supplies, related employment and other economic benefits, and the protection, maintenance, and enhancement of a productive and stable forest resource system for the benefit of present and future generations.

Vegetation Management Program (VMP): CAL FIRE's VMP is a cost-sharing program that focuses on the use of prescribed fire, and some mechanical means, for addressing wildland fire fuel hazards and other resource management issues on State Responsibility Area (SRA) lands. VMP allows private landowners to enter into a contract with CAL FIRE to use prescribed fire and/or mechanical treatments to accomplish a combination of fire protection and resource management goals. Implementation of VMP projects is by CAL FIRE Units. The projects which fit within a unit's priority areas (e.g., those identified through the Fire Plan) and are considered to be of most value to the unit are those that will be completed. Landowners who choose to apply for participation in the Vegetation Management Program should contact their local Battalion Unit for more details.

CAL FIRE provides several competitive grant funding programs for vegetation treatments:

Greenhouse Gas Reduction Fund (GGRF) – Fuels Reduction: CAL FIRE will solicit and competitively award grants that reduce hazardous fuels and are designed to meet greenhouse gas emission objectives. Payments will be made to grantees via reimbursements. All projects shall be designed to meet greenhouse gas emission objectives. These objectives include increased carbon sequestration in trees retained on the project site, reduction of wildfire hazards to reduce wildfire emissions, utilization of biomass to offset use of fossil fuels, and utilization of solid wood materials to offset emissions resulting from removal of vegetation. Vegetation treatment forestry prescriptions will focus on treating understory trees and brush with a goal of reducing fire hazards, improving tree growth, stabilizing carbon in retained trees, and increasing forest resilience. All projects will include a scientific methodology to calculate and quantify the GHG emission reductions resulting from the project. Priority shall be given to projects which utilize biomass and other solid wood products; provide assurance of achieving and retaining GHG benefits, and projects which are included in a local fire plan or conservation plan; and projects that have a documented assessment of need for providing wildfire protection of

human infrastructure and watershed values, while providing other co-benefits (reduced forest pest damage, airshed improvements in non-attainment air basins, invasive weed control, improvement to wildlife habitat, etc.)

Forest Health Greenhouse Gas Reduction Fund (GGRF) Grants: The Forest Health GGRF Grant Program is a new program and will use funds provided by the Greenhouse Gas Reduction Fund for California Climate Investments administered by CAL FIRE. Through the Forest Health GGRF Grant Program, CAL FIRE funds and implements projects to proactively restore forest health in order to reduce greenhouse gases, to protect upper watersheds where the state's water supply originates, to promote the long-term storage of carbon in forest trees and soils, minimize the loss of forest carbon from large, intense wildfires, and to further the goals of the California Global Warming Solutions Act of 2006 (Assembly Bill 32, Health and Safety Code Section 38500 et seq.) (AB 32).

Forest Health GGRF Grant projects must focus on large, landscape-scale forestlands composed of one or more landowners, which may cover multiple jurisdictions. Projects must be comprised of logical management units and greater consideration will be given to organizations with a proven record of success in achieving consensus-based solutions between stakeholder groups with different priorities and perspectives. Forest Health GGRF Grant projects may include reforestation, fuel reduction, pest management, conservation, and biomass utilization intended to increase forest health, increase carbon storage in forests, reduce wildfire emissions and protect upper watersheds, where much of the State's water supply originates. Projects that implement a mix of these activities, with multiple partners will be given priority.

State Responsibility Area Fire Prevention Fund (SRAFPF) Grant Program: The State Responsibility Area Fire Prevention Fund (SRAFPF) Grant Program provides funding for projects related to the removal of dead or dying trees, hazardous fuel (vegetation) reduction, fire prevention education, and fire prevention planning. Projects funded by the SRAFPF and TM grants will reduce the risk of fire ignition and spread in and adjacent to communities, educate owners of habitable structures about wildfire risks, allow for strategic, long-term planning to reduce the risk of wildfire to communities in the SRA throughout the State, or remove dead or dying trees that pose a threat to public health and safety. This grant funding source is highly competitive and is focused on areas with higher densities of residents or tree mortality.

More information about CAL FIRE's grant programs can be found online at:
<http://www.fire.ca.gov/grants/grants>.

9.4 List of Additional Professional Assistance

Provide a list of agencies and individuals that the landowner has or may consult for special sites, threatened and endangered species, desired species, livestock specialists, Native American cultural values, etc. additionally, list agencies and with current contact names and numbers the owner can contact for guidance and help. This list may include, but is not limited to:

- Local California Department of Fish and Wildlife
- CAL FIRE: local Battalion contact, Regional Forestry Assistance Specialist for CFIP, the L.A. Moran Reforestation Center, local Associate State Archaeologist
- Local Fire Department

- University of California Cooperative Extension
- Local Air Quality Management District
- Local Resource Conservation District
- Local NRCS Field Office

10. REFERENCES

Forest Carbon Action Team. 2017. California Forest Carbon Plan: Managing our Forest Landscapes in a Changing Climate. Draft for Public Review. Sacramento, California. 201pp.

Clark, J., J. Sessions, O. Krankina, and T. Mannes. 2011. Impacts of Thinning on Carbon Stores in the PNW: A Plot Level Analysis. College of Forestry, Oregon State University. 72pp.

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(12): 1-28.

North, M., M. Hurteau, and J. Innes. 2009. Fire suppression and fuels treatment effects on mixed-conifer carbon stocks and emissions. *Ecological Applications* 19(6):1385-1396.

Westerling, A.L., H.G. Hidalgo, D.R. Cayan, and T.W. Swetnam. 2006. Warming and earlier spring increase western U.S. forest wildfire activity. *Science* 313:940–943.

List additional references used in this plan.

11. APPENDICES

Appendix A: Glossary

Include definitions needed for this plan.

Appendix B: Road Treatment Recommendations for Erosion Control Points

Table 5-1 may be placed in this Appendix with accompanying pictures of the ECPs.

Appendix C: NRCS Soil Survey Geographic Database Report

Include the NRCS Soil Survey Geographic Database Report generated from the Web Soil Survey <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>

Appendix D: Upland & Aquatic Wildlife List and Special Status Species Fact Sheets

Include a more comprehensive list of both upland and aquatic wildlife found on or within the vicinity of the property. Include any special status species fact sheets to provide more information to the landowner.

Appendix E: Burn Information and Fire Preparedness Information

Include local outdoor burning guidelines and regulations. Also attach general fire preparedness information from CAL FIRE or local Fire Safe Council.

Appendix F: Tax and Business Management

This section includes a series of statements related to tax and business management that should be included in plans.

Property tax – The forest management plan should document the current tax status of the property. Your state might have specific property tax programs that you may be eligible to participate in. Please be aware of the program rules and regulations.

Income tax – Include a statement that timber harvest and other revenue generating activities generally produce a federal and state income tax liability. Tax credits may be available for some management activities.

Estate tax – Include a statement that good estate planning can help to lessen tax liability when passing land to heirs and that landowners should seek good planning and tax advice.

Record keeping – Include a statement that good record keeping can help landowners manage their assets; increase their revenues; and minimize their tax liability.

Land Use – Document the land use classifications of the property from the county land use plan.

Appendix G: Selected Standards & Specifications

Standards and specification for treatment activities will be written by NRCS technical assistance staff when using the EQIP program and a contracted RPF when using CAL FIRE's CFIP program. For general NRCS standards, please refer to the Electronic Field Office Technical Guide (Efotg) online at <http://efotg.sc.egov.usda.gov/>.

For more information about CFIP, please refer to the most recent CFIP Guidelines; a link may be found online at: <http://calfire.ca.gov/resourcemgt/resourcemgtforestryassistancecfip>.

Appendix H: Supporting Data

Include any supporting data and modeling outputs. This may include inventory data and methodology used.

Appendix I: Confidential Addendums

Include any confidential information, such as cultural records check or past CEQA or NEPA documents.

Appendix J: Past Plans, Amendments, and Updates

Include any past plans, amendments, or updates.