

Forest Management Plans

Jason Wells

Forester

Sonoma Resource Conservation District

Why have a management plan?

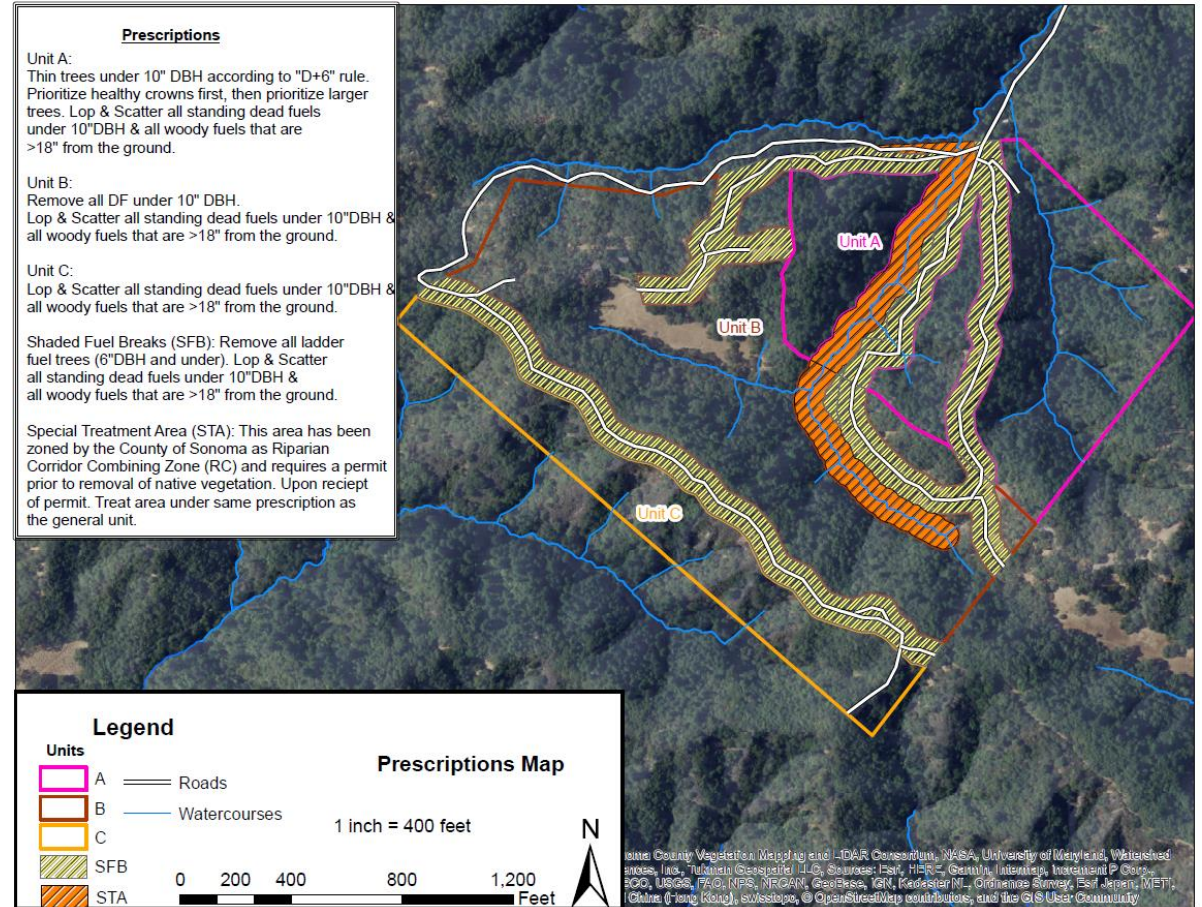
- Puts on paper your specific goals for your property
- Identifies current property conditions and discusses desired future conditions
- Provides specific recommendations on how to manage vegetation, streams, and roads in order to meet previously outlined goals
- Connects you with cost-share or other funding sources to implement recommendations on the ground and is required to be eligible for participation in CFIP and EQIP cost-share programs
- This plan is not meant to sit on a shelf – it is meant to help you actively manage your forestland for the next 5-10 years (the general targeted lifespan of a FMP) and into the future

4. MANAGEMENT GOALS & OBJECTIVES

Production/Business	
<input checked="" type="checkbox"/>	Timber production
Quality of Life	
<input checked="" type="checkbox"/>	Increase and/or maintain aesthetics of the property
Forest Health	
<input checked="" type="checkbox"/>	Wildfire protection and fuel load reduction/promote fire resilient forest
<input checked="" type="checkbox"/>	Prevent and/or control insects and/or disease (list)
<input checked="" type="checkbox"/>	Reduce erosion of streambanks and gullies
<input checked="" type="checkbox"/>	Maintain or enhance oak woodland, native grassland, or other plant communities

The landowners purchased the property for the privacy and beauty that a forested parcel provides. They are interested in managing the forest to create healthy and resilient stands of trees that are capable of withstanding drought, insect attack, and fire. The landowners have noticed a decline in the Douglas-fir trees on their property in recent years, likely due to drought stresses, and they are concerned with the fire hazard that the dead trees may present. The landowners are interested in maintaining or enhancing oak woodland on their property, and they generally prefer the mixed hardwood component in their forests which consists of multiple oak species, California bay laurel, madrone, and manzanita species. The landowners are interested in sustainable timber harvesting, mostly as a means to remove declining fir trees and release the surrounding suppressed trees, with the potential side benefit of generating a small income.

The landowner's short term goals are to create defensible space around their property and access routes, and to generally reduce the fuel loading on their property to create more favorable conditions in the event of a wildfire. After the immediate concern of defensible space is addressed, they would like to begin thinning the stand, potentially utilizing commercial harvest exemptions such as the oak woodland restoration exemption, forest fire prevention exemption, and dead & dying tree exemption. In the long term they would like to favor oak recruitment over Douglas-fir, and maintain this hardwood component in their forest.



Here is a list of some (but not all) typical management objectives:

- Address forest health: create resilient forest systems capable of enduring biotic and abiotic stresses such as drought, fire, insect and pathogen infestation, and provide growing space for trees of all sizes and ages.
- Increase access to the property
- Create defensible space around property and access routes
- Manage for increased carbon storage or standing volume in living trees per acre
- Increase forest habitat for specific wildlife, or for wildlife in general
- Road improvements for access and water quality
- Reduce erosion
- Increase quality of in-stream aquatic habitat
- Increase recreational potential: trail building, mushroom hunting, etc.
- Increase non-potable water storage
- Reduce/manage invasive weeds
- Reforestation or Afforestation
- Maintain or enhance oak woodland, native grassland, or other plant communities
- Favor certain tree species over others (i.e. increase oak recruitment versus Douglas-fir)
- Increase tree species diversity
- Generate income through sustainable timber harvest, or livestock management
- Increase wood quality for future timber harvest
- Fuels reduction/ management of dead wood
- Manage for aesthetics

A goal without a plan is just a wish

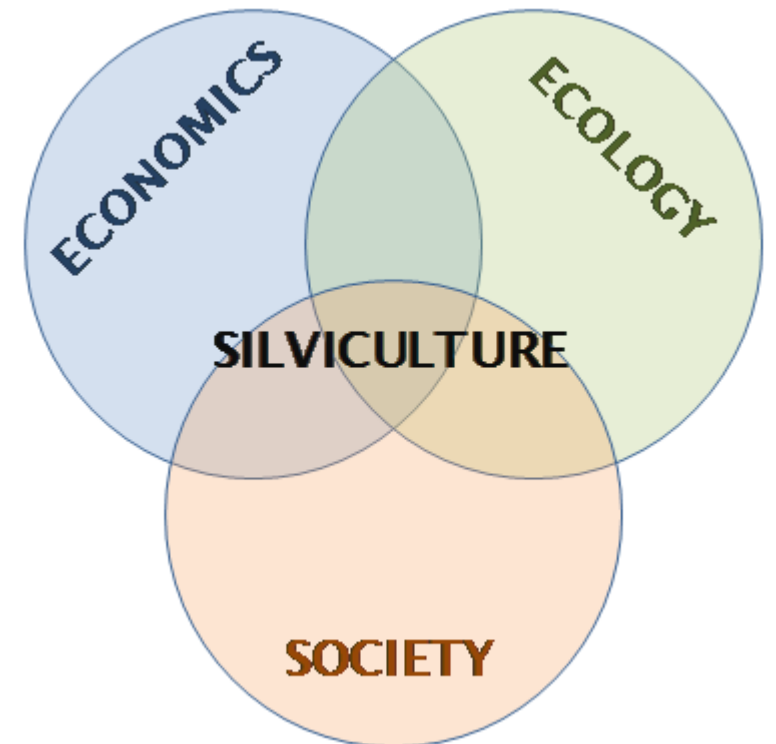
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One does not plan and then try to make circumstances fit those plans. One tries to make plans fit the circumstances.

-[George S. Patton](#), *War as I Knew It* (1947)

Introduction to Silviculture/ Vegetation Management

- What is silviculture?
- Why should I manage the vegetation on my property?
- Why do I need a plan



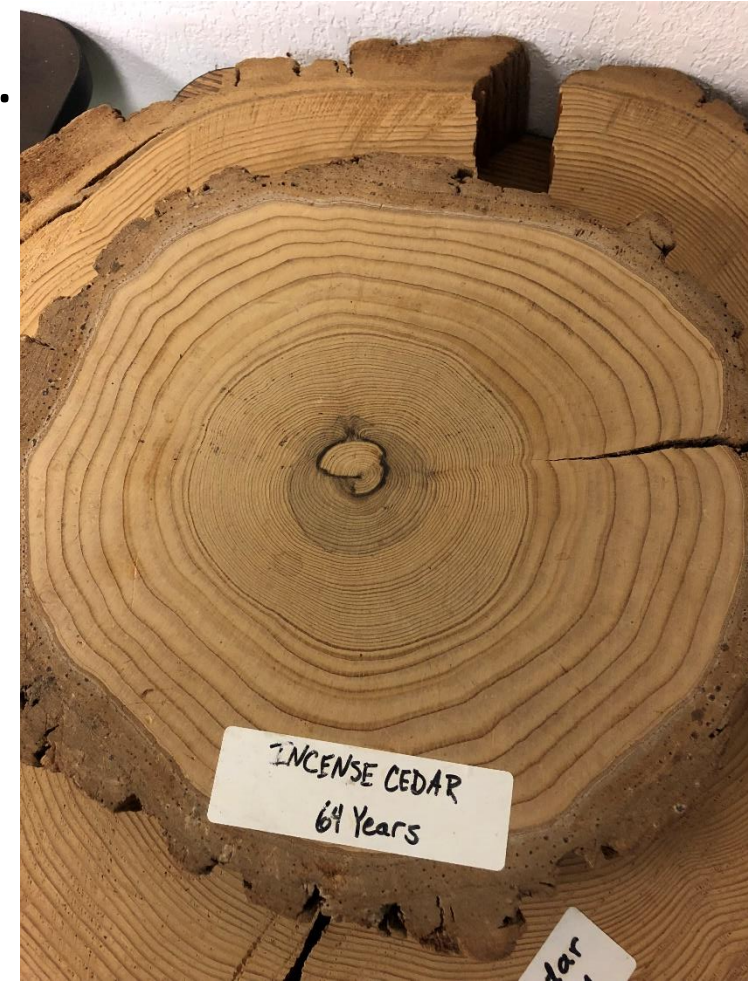
What is silviculture?

- Silvics
 - Derived from the Latin word “Silva” meaning forest
 - The study of the life history and characteristics of forest trees especially as they occur in stands and with particular reference to environmental influences. – Merriam Webster Dictionary
- Culture (verb)
 - Derived from the latin word “colere” to ‘inhabit, care for, till’
- In English
 - The art and science of growing trees to achieve your (as steward of the land) goals

4 Point Summary of Silviculture

1. Where there is growing space, things grow.
2. Silviculture is managing what grows in that space.
3. When growing space is full, competition sets in.
4. Silviculture is managing competition.

An example of “release” from competition



The importance of Ecology when managing vegetation

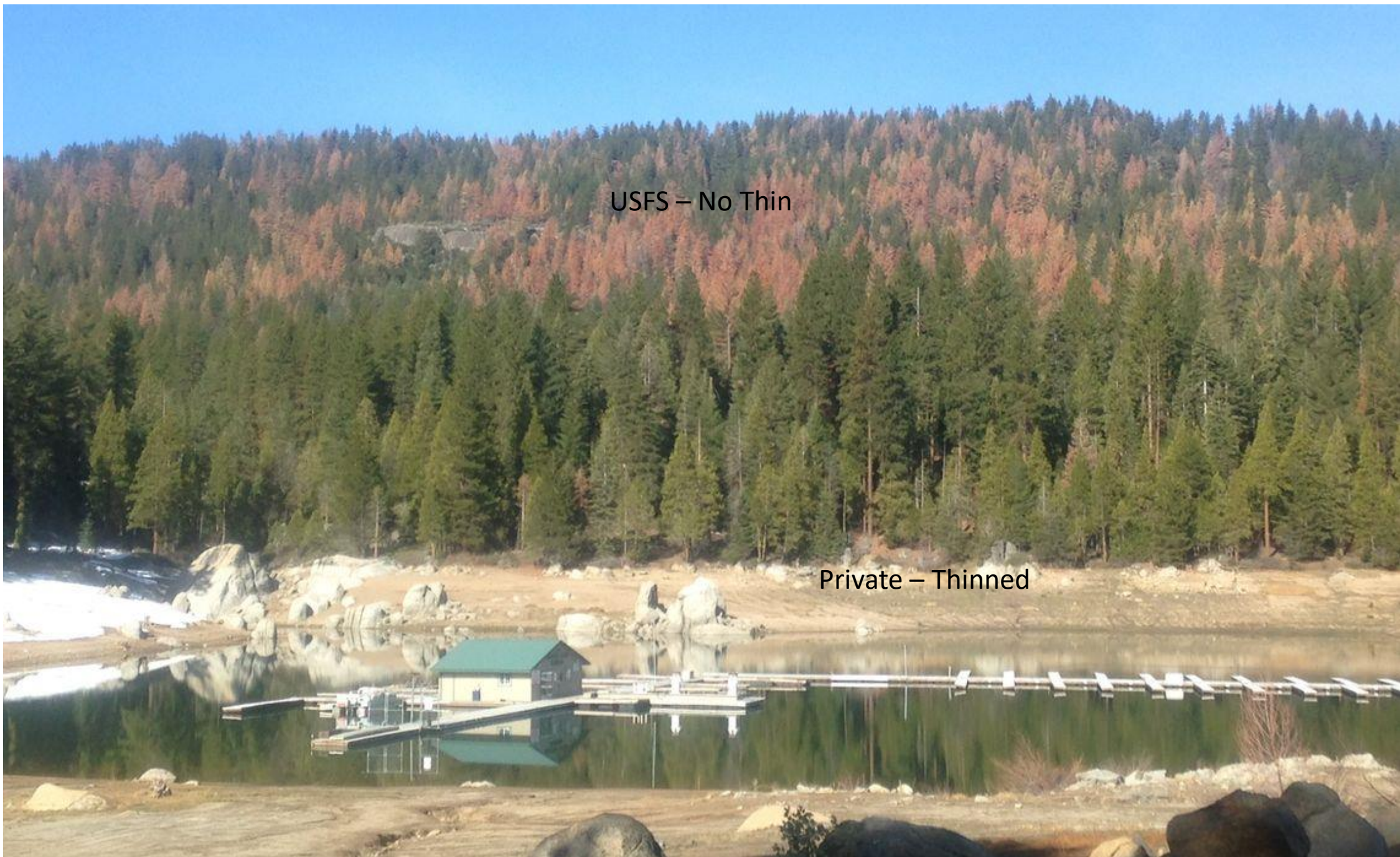
- All plants need water, light, and soil nutrients to live; the degree to which those inputs are needed will vary by species, and the community of plants found in an area will largely be dictated by environmental factors (which includes fire) that contribute to their success over another species.

***The Law of Constant Final Yield** states that final yield per unit area is constant and independent of plant density. At any initial spacing, plants grow rapidly at first to fill out a complete canopy, then individual plant growth slows as competition between plants increases. Finally competition is so severe that the only additions to yield are from space made available as a plant dies from suppression. The law proposes that this final gross yield is equal or constant at any spacing, and that the difference in spacing influences only the time required to reach the constant final yield.*

***Stand dynamics** is the study of changes in forest stand structure over time, including stand behavior with disturbances. Foresters must be able to predict what kind of vegetation will regenerate disturbances, and what patterns of development should be anticipated in all the vegetation as stands grow older. –The Practice of Silviculture, Smith et.al*

Why should I manage the vegetation on my property?

- Reasons will be diverse and depend on goals
- Actions will largely depend on multiple factors
 - Weight placed on individual goals (often in conflict with one another)
 - Vegetation types
 - Access & feasibility of operations
 - Financial incentives and limitations



USFS – No Thin

Private – Thinned

August 2019



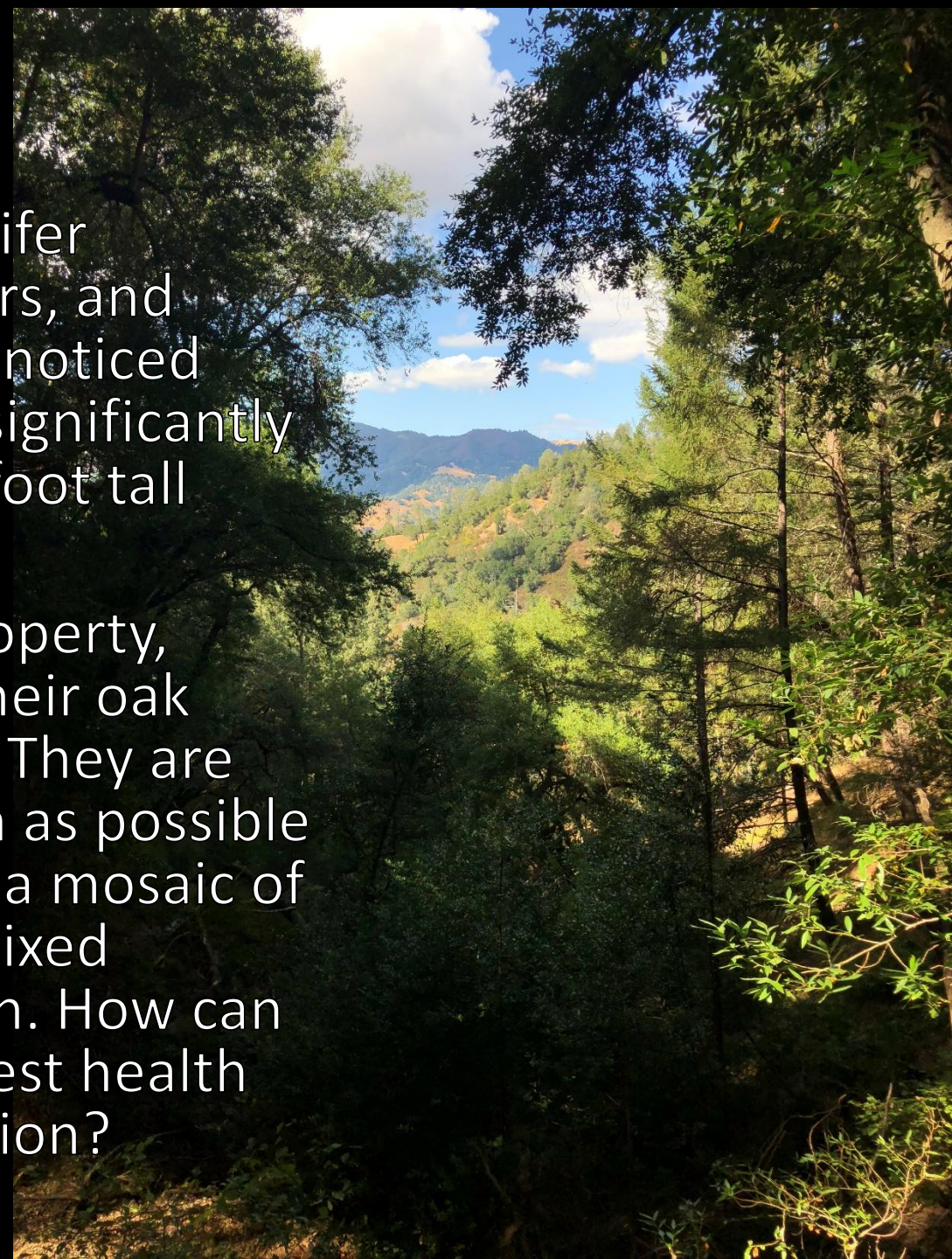
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Question

A 60 acre landowner in a mixed hardwood-conifer woodland has owned their property for 40 years, and have always let nature take its course. They've noticed many of the meadows on their property have significantly shrunk in size and are now occupied by 40-50 foot tall Douglas-fir that average 16 inches in diameter.

The landowner highly values wildlife on the property, especially the acorn woodpeckers. They love their oak trees, and want to make sure they are healthy. They are also interested in sequestering as much carbon as possible on the property. The property currently shows a mosaic of forest types, ranging from conifer dominant, mixed hardwood-conifer, and oak woodland-savannah. How can the landowner best meet their wildlife and forest health objectives while maximizing carbon sequestration?



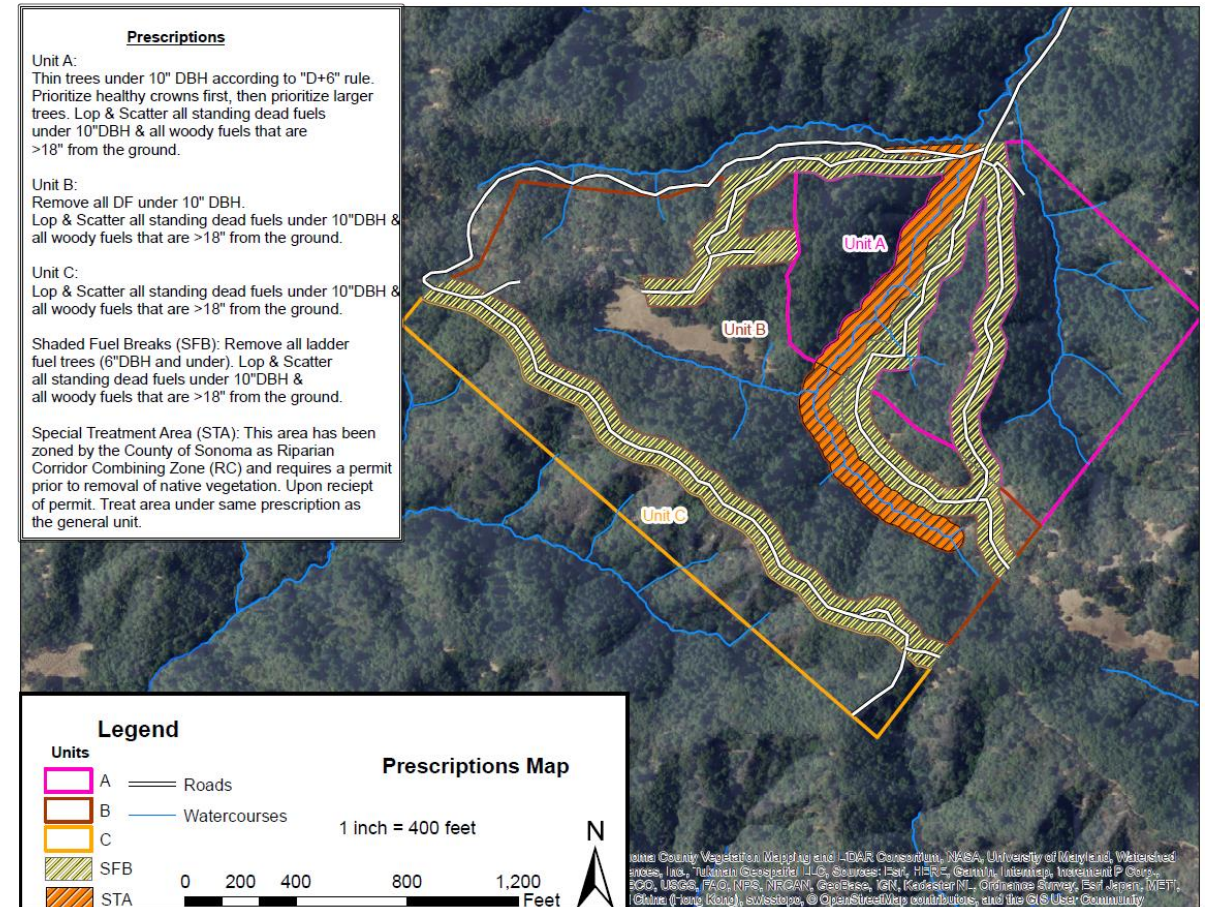
Why do I need a plan?

- Solidifies goals on paper
- Identifies current conditions
- Prescribes actions to meet goals
- Identifies treatment priorities
- Identifies restraints on management



Features of a forest management plan

- Unit boundary delineation
- Road system planning
- Environmental & cultural resource planning
- Management prescriptions



Developing Unit Boundaries

- Definitions
 - Unit: A management block, or area which will receive similar management actions over time
 - Stand: A contiguous group of trees sufficiently uniform in species composition, arrangement of age classes, site quality, and condition to be a desirable unit
- Unit Delineation (boundaries)
 - Stands, road systems, physical features, parcels, etc.

Road Planning

- Roads increase sediment mobilization
- Poorly designed road systems:
 - Increase potential for delivery of sediment to watercourses
 - Increase potential for long-term maintenance issues/ can fail
 - Are expensive
- Well designed road systems:
 - Are as short as possible
 - Are relatively long-lasting with little maintenance
 - Deliver less sediment to watercourses





Road Failure



Environmental and Cultural Resource Planning

- Cutting trees alters habitat
- Heavy equipment reduces growing capacity & disturbs soil
- Movement of cultural resources can ruin their value to archaeologists



California Cooperative Forest Management Plan

- Developed by
 - US Forest Service
 - California Department of Forestry & Fire Protection (Cal Fire)
 - Natural Resource Conservation Service (NRCS)
 - American Tree Farm System
- Discuss
 - Property ownership information & history
 - Current conditions
 - Landowner objectives
 - Management plan implementation

CURRENT PROPERTY CONDITIONS

Property Infrastructure

- Discuss existing improvements (including dwellings, roads and access, outbuildings, fencing, water improvements, wells, power lines, etc).
- Note property security measures including trespass and fire protection.

Forest Infrastructure

- Discuss overall forest structure, percent of productive forest soils, regeneration levels and current silvicultural practices.
- Note current conservation practices for plant, water, wildlife and air resources as well as insect and /or disease problems.
- Discuss current recreational uses, and aesthetic values.
- Discuss current markets.

Roads

- Assess and map roads system and major trails; depict stream crossings and/or culvert conditions and needed drainage improvements. Are they sized for 100 year storm events?
- Describe conservation practices for general maintenance, erosion reduction, road surface condition and Runoff, drainage-dips, culverts, stream crossings, weed control, and time-of-year use.

Access and Security

- Are property boundaries identified including fences, gates, and boundary/corner markers?
- Are unwanted trespass activities known?

Recreation

- Describe and plan for recreational opportunities and identify supporting resources.

Invasive Species

- Discuss invasive species found and designed eradication measures.

Climate Considerations and Carbon Sequestration

- Discuss practices for the possibility of implementing carbon sequestration activities.

Adjacent Ownership Concerns

- Review aesthetic quality, wildfire, privacy, wildlife movement and habitat, noxious weeds, and other concerns and how the property management interacts with neighboring properties.

Economic Sustainability

- Discuss the value of a business plan and potential resource development.
- Discuss tax liability and opportunities.

Soil Description, Site Description and Protection Measures (Include a soil map)

- Describe soil types, site class, potential growth/acre/year, erosion hazard ratings, equipment limitations, known geological hazards and landslides.
- Append the soil description and, if available, the ecological site description (ESD).
- Discuss conservation practices for steep slopes, woody debris retention, nutrient cycling, vehicle travel, soil compaction, flood runoff, and livestock issues.

Streams, Wetlands, and Ponds

- Describe water resources present including streams, wetlands, ponds, etc and their FPA classifications, and note their 303(d) status and/or aquatic based T&E species concerns.
- Discuss conservation practices for riparian habitat, wetlands, fish and wildlife concerns, endangered species protection, road crossings, and water protection zones.

Air Resources

- Discuss smoke management issues with prescribe fire or pile burning and unwanted biomass removal alternatives
- Note the climate values of this forest with climate amelioration and carbon sequestration.

Fish & Aquatic Species

- Identify fish streams and note streams with anadromous fish or listed fish species as well as other significant aquatic species using the water resources and riparian area(s)
- Describe general condition of the fish habitat including large wood, pools, riparian cover, migration barriers and current or desired buffer widths.
- Describe potential habitat improvements.

Upland Wildlife

- Identify bird and animal species observed or known to be present
- Describe general condition of habitat and the habitat elements such as den sites, snag retention, downed wood, migration corridors and water sources.
- Describe potential habitat improvements such as access, nest boxes, hunting, water development, and domestic animal control.

List State and Federal threatened or endangered species - plants or animals

- Discuss T&E species observed or known and provide the results of the California Department of Fish and Game NDDB and BIOS information sites for three miles of the property.

LANDOWNER MANAGEMENT OBJECTIVES

Silvics (growing and tending of forests)

Desired Forest Condition:

Pest/Fire

Fire protection objectives.

Forest Health objectives including insects and disease

Invasive species, plant and animal, concerns

Trespass concerns.

Wildlife

Desired species habitat improvement:

Additional Objectives For:

Livestock:

Aesthetics:

Income:

Family Legacy:

Other:

MANAGEMENT PLAN IMPLEMENTATION

Constraints and Proposed Alternatives

- Discuss the desired alternative and have a cost/benefit analysis of property improvement investments and a no action alternative.
- If Forest Vegetation Simulation (FVS) or CRPTOS is executed, the generated results of the alternative selection should be appended to help document the alternative decision.

Silvics (Desired Forest Condition: Reforestation and Afforestation)

- Describe desired areas for regeneration practices with specifications for natural seedling recruitment, site preparation, planting and/or follow-up.
- Forest Stand Improvement
- Describe the area to be improved and the practice specifications for thinning and /or pruning.

Pests

- Problems and Protection from Pests
- Note known and/or potential insects, diseases, animals, weeds, and invasive species on property.
- Discuss prevention guidelines including how to inventory, control, and monitor infestations.
- Describe the range of integrated pest management tools, including mechanical, physical, biological, cultural or chemical management.

Fire Protection

- Discuss fire protection practices for mechanical, hand work, herbicide application and/or broadcast burning for stand/habitat improvement, fuel reduction and fire-wise safety.
- Describe and discuss local fire history, potential sources of fire ignition, fuel hazards, and infrastructure for protection including access and evacuation routes.
- Discuss the values of shaded fuel breaks, fuel breaks in strategic locations, and potential to connect with neighbors or a community effort.

Trespass concerns

Wildlife

- Desired species habitat improvement:

Additional Objectives For:

Livestock:

Aesthetics:

Income:

Family Legacy:

Recreation:

Other:

FOREST MANAGEMENT UNIT INFORMATION:

Add as many pages of this section as there are management units designed for the ownership

For each forest management unit, write management objectives and a brief description of the management unit and its condition. Further detailed inventory/plot data can be included if desired. FVS or CRPTO forest modeling outputs can be appended to each unit description.

Name or Unit # _____ Acres _____

Location (describe and map id): _____

Objectives:

Describe type of silvicultural treatment including pre/post harvest activities and slash management.

Description:

Stand history, age and desired rotation cycle:

Tree species present, forest type and/or ecological site description (ESD):

Site index, soil type, elevation, slope:

DBH/size class, basal area, trees/acre, stocking, growth/yield potential:

Regeneration and stand improvement needs:

Riparian, meadows, aquatic habitat, stream and other watercourses:

Understory, downed woody debris, snags, wildlife habitat:

Erosion concerns, domestic uses and other conservation issues:

Unit Management Resource Concerns and Recommendations