

2025 SHASTA FORESTRY CHALLENGE

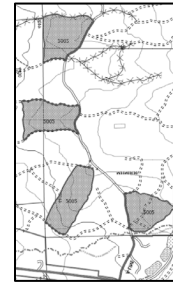
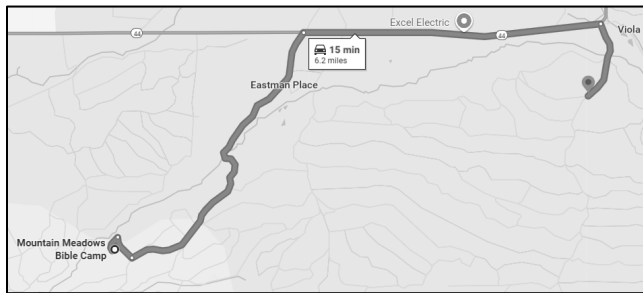
FOCUS TOPIC QUESTION

Introduction:

The focus topic is ***Commercial Thinning in Even-Aged Plantations***. Students will assess four even-aged units planted in 2002 and determine if commercial thinning should be conducted now or later.

Location:

The four units total 115 acres and are located 6 miles from Mountain Meadows Camp just south of Viola. These units and the land surrounding them are owned by Sierra Pacific Industries and managed to produce timber.



Background Information:

Sierra Pacific Industries

Sierra Pacific Industries (SPI) is a fourth-generation, family-owned forest products company based in Anderson, California. SPI owns and manages more than 2.4 million acres of timberland in California, Oregon and Washington and is one of the largest U.S. lumber manufacturers. The company also produces millwork, windows and renewable energy. SPI is committed to managing its lands in a responsible and sustainable manner to protect the environment while providing quality wood products and renewable power for consumers.

Silviculture

“Silviculture” is the science and practice of perpetuating forests by growing trees on a large scale (that is, not a single tree, but rather growing whole “stands” of trees). Different methods of growing timber stands can be divided into “selection” and “even-aged” methods. These units and the surrounding ones are being managed with even-age silviculture. In even-aged harvesting, trees are removed in larger areas (typically 20 to 30 acres) so that a new

stand of trees that are the same age is created. One type of even-aged management is clearcutting where, after trees are harvested, seedlings are planted to establish a new stand.

There are some advantages to the clearcut method:

- The species and spacing of new trees are controlled, insuring that healthy, vigorous, and disease-resistant trees will occupy the space.
- Once the stand is established and the competing brush is controlled, there is minimal disturbance of the forest for many years, until harvest.

Commercial Thinning

Commercial thinning is the removal of trees in a young-growth stand to maintain or increase average stand diameter of the residual crop trees, promote timber growth, and/or improve forest health. The residual stand shall consist primarily of healthy and vigorous dominant and codominant trees from the preharvest stand. When an even-aged unit reaches 20 to 30 years of age, the trees are growing large enough that they may start competing for resources, slowing growth. Typical ways to assess competition are to examine annual growth rings by using an increment borer to take a core sample and by looking at the amount of overlap of tree crowns.

An intermediate step in the life of a plantation is to conduct a commercial thin. Commercial thinning is the removal of trees in a young-growth stand to maintain or increase average stand diameter of the residual crop trees, promote timber growth, and/or improve forest health. The residual stand shall consist primarily of healthy and vigorous dominant and codominant trees from the preharvest stand. Harvested logs are taken to a lumber mill and made into products such as dimensional lumber and fencing material. The byproducts (treetops and limbs) from a commercial thin are usually piled and burned onsite. However, the material can be chipped and taken to a biomass plant.

Because small trees have less value than fully mature trees, the price paid per thousand board feet is lower. Often, the price paid at the mill is less than the cost of logging and hauling the trees. The forest manager needs to balance the need for thinning to promote growth of the residual stand with the economic consequences of the commercial thin.

The other factor to take into consideration is whether the trees are large enough to fit onto a log truck. For pine, the logs need to be 33 feet long with a minimum 6-inch top. For fir, they need to be either 41 feet or 20.5 feet. Because the goal is to leave or retain the larger trees, the smaller ones need to meet this standard.

California Forest Practice Rules

California is the most highly regulated place in the world in terms of forest management. The California Forest Practice Rules specify a “retention standard” to be left after a commercial thin. The standard is set by determining the average diameter at breast height (DBH) of the stand. If the average DBH is less than 14 inches, the standard is based on trees per acre. If the average DBH is equal to or greater than 14 inches, the standard is based on basal area. Once the data has been collected and an average DBH is known, we will determine which standard applies.

The Rules also address the legal document required to harvest timber for commercial use. In this case, one of two types of CalFire permits can be considered. Here is a summary of the attributes of each:

	Timber Harvest Plan	Forest Resilience Exemption
Prep Time	6 months to 1 year	4 to 6 weeks
Approval Time	4 months to 1 year	10 days
Max Acres	None	500
Length	5 years with the option of a 2-year extension	1 year
Diameter Limit	None	30 inches
QMD	None	Trees >8” DBH must increase

Prices Paid at the Mill and Logging / Hauling Costs

Current prices paid by the mill per thousand board feet (MBF) are as follows:

PP/SP = \$300 WF = \$450 DF = \$550 IC = \$400

Logging costs for small logs like these are \$190 to \$210 per MBF. The range of costs is due to terrain and tree spacing.

Hauling costs to the nearest mill in Anderson are \$110 to \$115 per MBF. The range is due to the type of road and the speed the truck can travel.

The landowner is also required to pay a yield tax, which varies by species. Tax rates are adjusted every six months. The tax rates, per MBF, for July through December 2025, are:

PP/SP: \$2.50 WF: \$6.50 DF: \$11.50 IC: \$4.50

Fieldtrip:

On the afternoon of Thursday, September 25, your team will be assigned a plot for data collection, and you will determine:

- The number of trees in the plot with a diameter at breast height (DBH) of 8" or greater, and their species
- The diameter at breast height, total height, and height to a 6-inch top for each tree
- The basal area for the plot measured with an angle gauge
- Growth rate for the past 5 years and the 5 years before that using an increment borer

Items to be Addressed in Your Presentation:

Your presentation should address the following topics:

1. Background information about Sierra Pacific Industries
2. Silviculture, with an emphasis on even-aged management and clearcutting
3. Life cycle of a plantation and the intermediate step of commercial thinning
4. Data collection procedure and a summary of the data
5. A determination of whether the trees will make logs large enough to put on a truck, if now is a good time to conduct a commercial thin, and what type of permit to use
6. Using current market prices, account for logging and hauling costs as well as yield tax, calculate the potential net income or loss for the project and justify the need to thin now if there is going to be a net loss

Resources:

On Thursday evening, you will be given resources on a flash drive to load onto your team's computer. Additionally, you can use photos you take during the field trip and statements from foresters you work with and interviews during Ask a Forester.

Final Product:

Your goal is to produce a 15-minute PowerPoint presentation that describes, in detail, your recommendation for managing these even-aged units over the next 7 years. You are encouraged to use photos and information collected on the fieldtrip, interviews with resource professionals during the Challenge, and the maps, tables, and information in the resources provided. Additionally, use the judges' score sheet as a checklist, to make sure you cover the items on which you will be scored.