

# VOLCANO FIRE

## THE BAD, THE UGLY AND THE GOOD

58 YEARS ON THE TAHOE NATIONAL FOREST

*FROM THE*

40<sup>TH</sup> ANNUAL FOREST VEGETATION MANAGEMENT CONFERENCE

JANUARY 17, 2019

ANDERSON, CALIFORNIA

FOR THE INLAND EMPIRE REFORESTATION COUNCIL  
COEUR D'ALENE IDAHO MARCH 3, 2020

Phil Aune

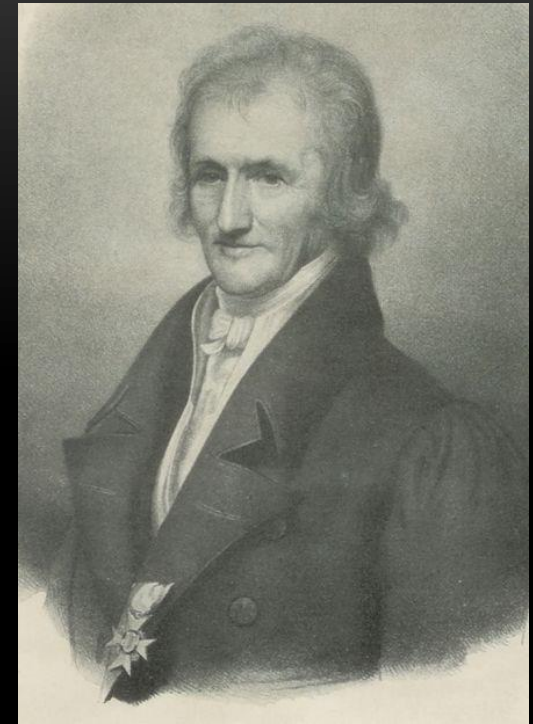
Retired



# PROBLEMS IN FORESTRY

## Heinrich Cotta in 1816

- The many sites our crops grows on
- The long time it takes to grow our crop
- Those who practice little write much and
- those who practice much write little









NILE 86

Philip S. Aune

U.S. FOREST SERVICE

STAYED AT THIS CABIN  
AUG 31 - SEPT 11, 1964

MARKED & CRUISED  
SEPT 22, 26, & 30; TAUN  
M.D.M. AS PART  
OF THE CEDAR CREEK  
TIMBER SALE





TAHOE  
National  
Forest

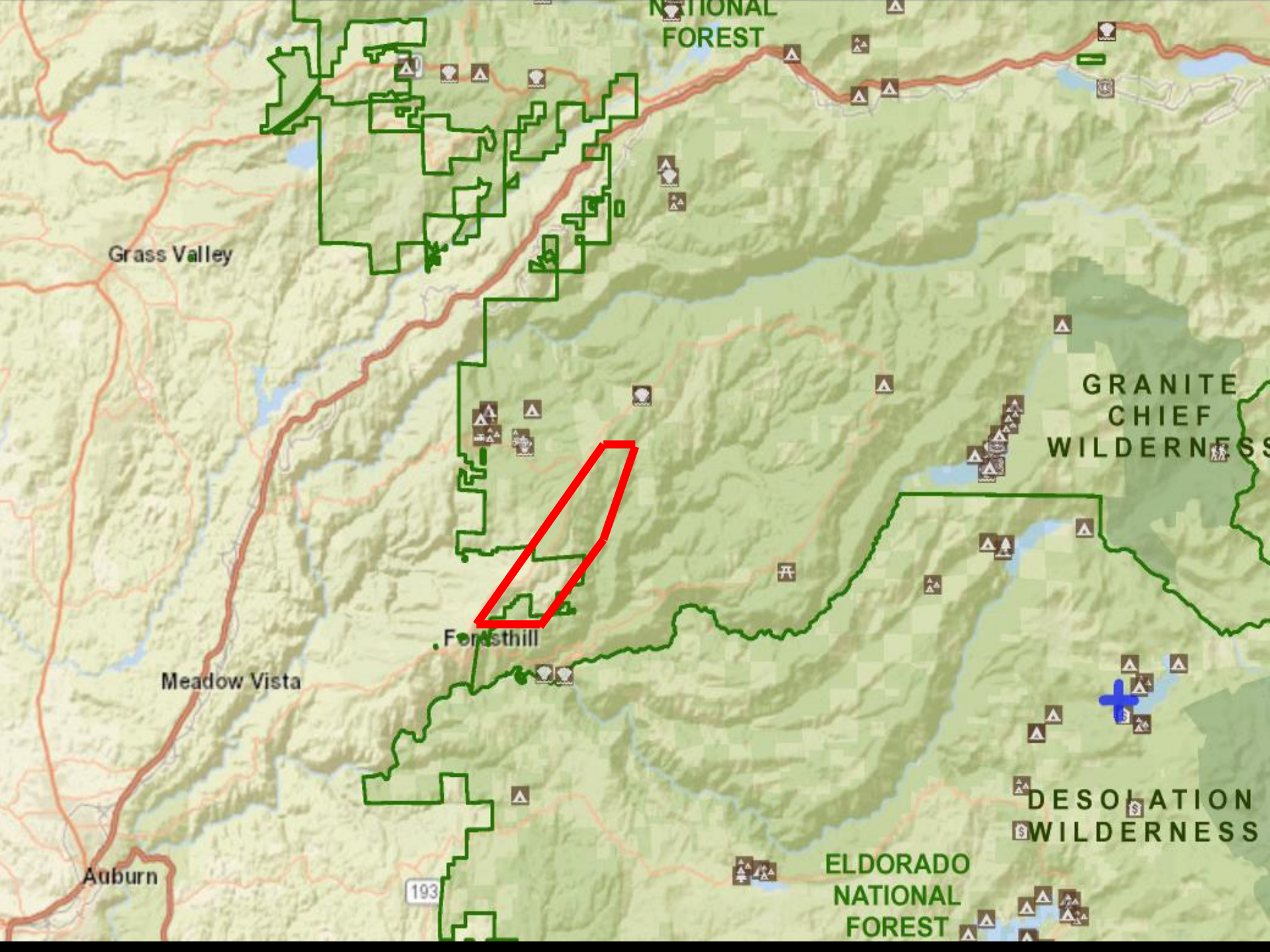
U.S. DEPARTMENT OF AGRICULTURE





# VOLCANO FIRE: THE BAD





Grass Valley

NATIONAL FOREST

GRANITE CHIEF WILDERNESS

Meadow Vista

Fondsthill

DESOLATION WILDERNESS

Auburn

193

ELDORADO NATIONAL FOREST





Volcano Fire August 20-28, 1960



# INDIVIDUAL FIRE REPORT

RANGER FIRE NO.	NAME OF FIRE
7	Volcano
REGION FIRE NO.	SIZE CLASS
	5

MANDATORY ITEMS: Class A- Items 1-39 Class B- Items 1-49b Class C, D and E- Items 1-53

This fire is being reported by the State as its fire. (Check one)  Yes  No

1. State [2-3] 2. County 3. Forest 4. Ranger District [6-7] or LUP [6-7]

California 4 Placer Tahoe 17 Foresthill 54

5. Supervisor [8-10] 6. Month [11] Day [12-13] Year [14] 7. Size Class [15] 8. General cause [16-17]

Fire No. 71 8 20 0 5 Recreation 37

9. Specific cause [18-19] 27. Burning index Buildup index [54-57]

Smoking 2 330 3230

10. Class of people [20] 28. Character of fire on arrival [58]

Transient 7 Violent 6

11. Fire started on [21] 29. Topography - vicinity of origin [59]

Outside F.S. Protection bdy. 3 lower 1/3 5

30. Slope [60]

80 to 100% 8

31. Aspect [61]

S 2

32. Elevation [62]

1400 1

33. Cover type - vicinity of origin [63-64]

Brush on non-timber soils 21

34. Specific fuel - point of origin [65]

Grass 0

35. Fuel type prevailing on area - origin to attack [66-67]

Heavy chamise & chaparral 24

36. Perimeter increase in chains per hour - discovery to attack [68-70]

20 87

37. Forward rate of spread in chains per hour - discovery to attack [71-72]

33 45

38. Map record:

Scale: \_\_\_\_\_ inches = 1 mile

map attached

TAHOE NATIONAL FOREST

Foresthill Ranger District

Foresthill, California

FEB 18 1961

RECEIVED

39. Location description

a. Township [73-75]

13N 131

b. Range [76-78]

11E 111

c. Section [79-80]

6 6

d. Mer. [79-80]

10N

Alternate description. Use for land not covered by GLO [73-76]

e. Latitude [73-76]

f. Longitude [77-80]

40. Cover type prevailing on burned area [18-19]

Timber-commercial 4 103,815 10382

41. Area when discovered [20-21]

2 0 83,684 45

42. Area when attacked [22-24]

10 10

43. Area when controlled [25-29]

44,386 47 1080 2

44. Perimeter in chains when controlled [30-33]

4385 61 1520 3

45. Maximum number of line workers [34-37]

2490 99,700 1

D.S.	DATE	HOUR	FL E
12. Origin (Check one) <input type="checkbox"/> Known <input checked="" type="checkbox"/> Guess	8/20	1355	[22
13. Discovered (Item 13 minus 12)	8/20	1405	[
14. Reported (Item 14 minus 13)	8/20	1407	
15. Departed	8/20	1407	
16. First attack (Item 16 minus 13)	8/20	1427	[3
17. Travel time (Item 16 minus 15)			
18. First reinforcements (Item 18 minus 16)	8/20	1500	
19. Fire controlled (Item 19 minus 16)	8/27	2400	[4
20. Fire mopped up (Item 20 minus 19)	11/2	1800	[4
21. Fire out	11/15	0800	
22. Discovered by (Class)	Location		





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Outside F.S. Protection bdry. 3 lower 1/3 5

30. Slope [60]

80 to 100% 8

12. Origin (Check one) [22-23] 31. Aspect [61]

Known  Guess 8/20 1355 14 1 8 2

13. Discovered [24-25] [26-27] 32. Elevation [62]

(Item 13 minus 12) 8/20 1405 10 1400 1

14. Reported [28] [29-30] 33. Cover type - vicinity of origin [63-64]

(Item 14 minus 13) 8/20 1407 2 Brush on non-timber soils 21

15. Departed 34. Specific fuel - point of origin [65]

8/20 1407 Grass 0

16. First attack [31-32] [33-34] 35. Fuel type prevailing on area - origin to attack [66-67]

(Item 16 minus 13) 8/20 1427 22 Heavy chamise & chaparral 24

17. Travel time [35] [36-37] 36. Perimeter increase in chains per hour - discovery to attack [68-70]

(Item 16 minus 15) 20 87

18. First reinforcements [38] [39-40] 37. Forward rate of spread in chains per hour - discovery to attack [71-72]

(Item 18 minus 16) 8/20 1500 33 45

19. Fire controlled [41-43] 38. Map record:

(Item 19 minus 16) 8/27 2400 178

20. Fire mopped up [44-46] Scale: \_\_\_\_\_ inches = 1 mile

(Item 20 minus 19) 11/2 1800 1602

21. Fire out 11/15 0800

22. Discovered by (Class) Location (47)

Aircraft Obs.(other) over fire 8

23. Reported to (Class) Location (48)

Planned coop. Foresthill 7

24. First attack (Kind) Amount [49-50]

Ground tankers 4 34

25. First reinforcements (Kind) Amount [51-52]

Off. Tools-handtools 15 47

26. Hour control zone [53]

unclassified(Outside FS Prot. bdy) 6

40. Cover type prevailing on burned area [18-19]

Timber-commercial 4

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44,386 44386

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TAHOE NATIONAL FOREST  
Foresthill Ranger District  
Foresthill, California

FEB 18 1961

RECEIVED

44,386





## A special thank you to:

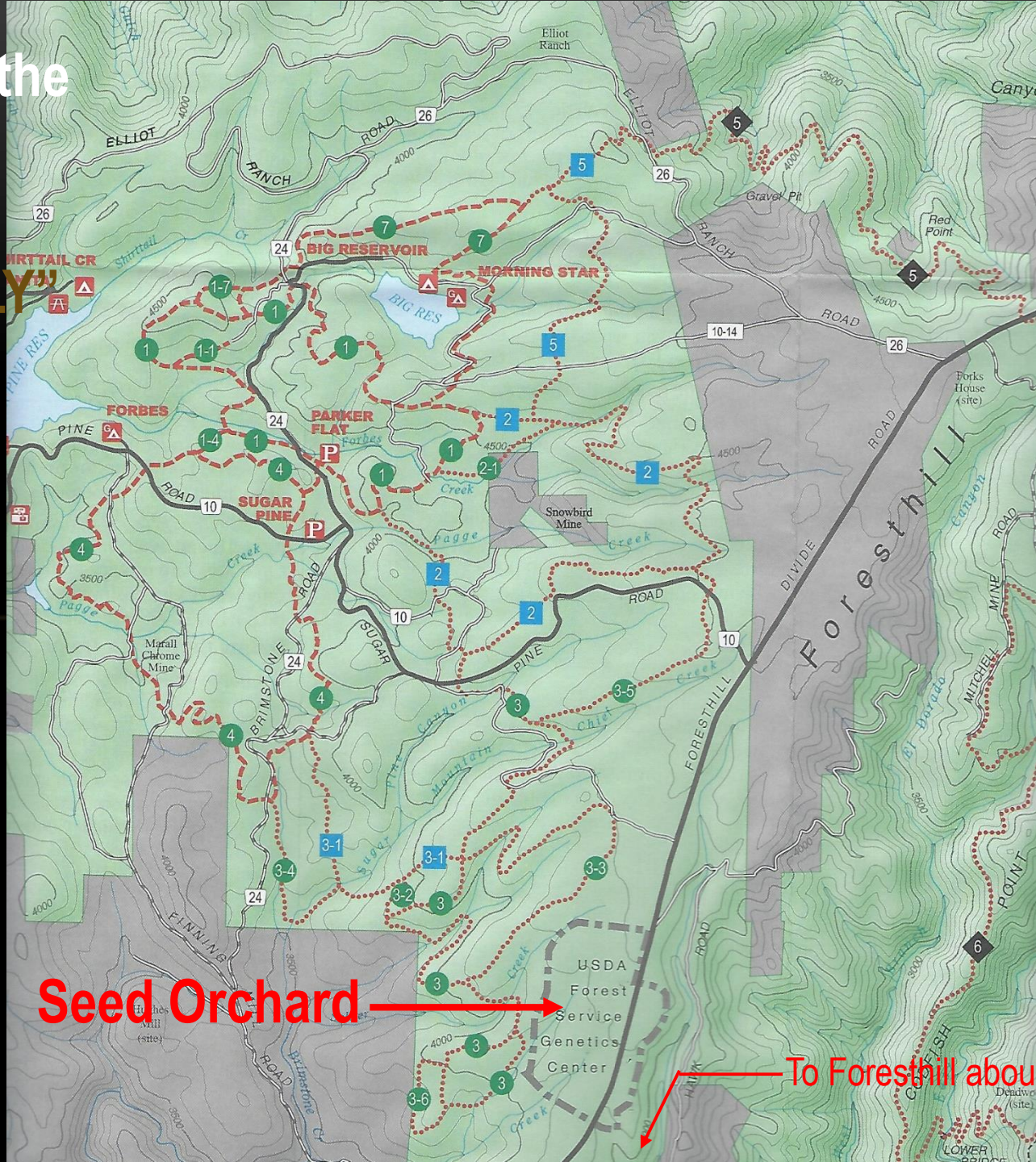
- The USFS
- The Tahoe NF
- The Foresthill RD and,
- Especially – **Carolyn Sipes**

For access to the following  
Historic photos



# VOLCANO FIRE: THE UGLY

Salvage -the  
start  
of  
"TheUGLY"



Seed Orchard →

→ To Foresthill about 12 miles



# Salvage Logging Begins in 1960









# Site Prep - Broadcast Burning Fall 1961





# Site Prep - Pile and Burn Near Elliot Ranch April 1962





# Site Prep - Windrows Near Elliot Ranch April 1962





# Burn Piles June 1962 – The beginning of the end of “The Ugly” Planting Begins





# Machine Planting – April, 1962





# Hand Planting





# First Release – August, 1962





# First Aerial Release – 1963





# BELL G2





# 1976 ALOUETTE II/LLAMA





# Plantation 5 years later – July 1967





# Plantation 6 years later – July 1968





# Plantation 6 years later – July 1968





# Plantation 10 years later – July 1972





**There were plenty of failures– July 1972**





# Site prep within plantation – July 1972





**Also started site prep lands converted to brush  
July 1972**





# Alternatives to Herbicides





# Spot Placement Plastic Mats Release – May, 1970









1975 – Tahoe NF purchased a Hydro-Ax

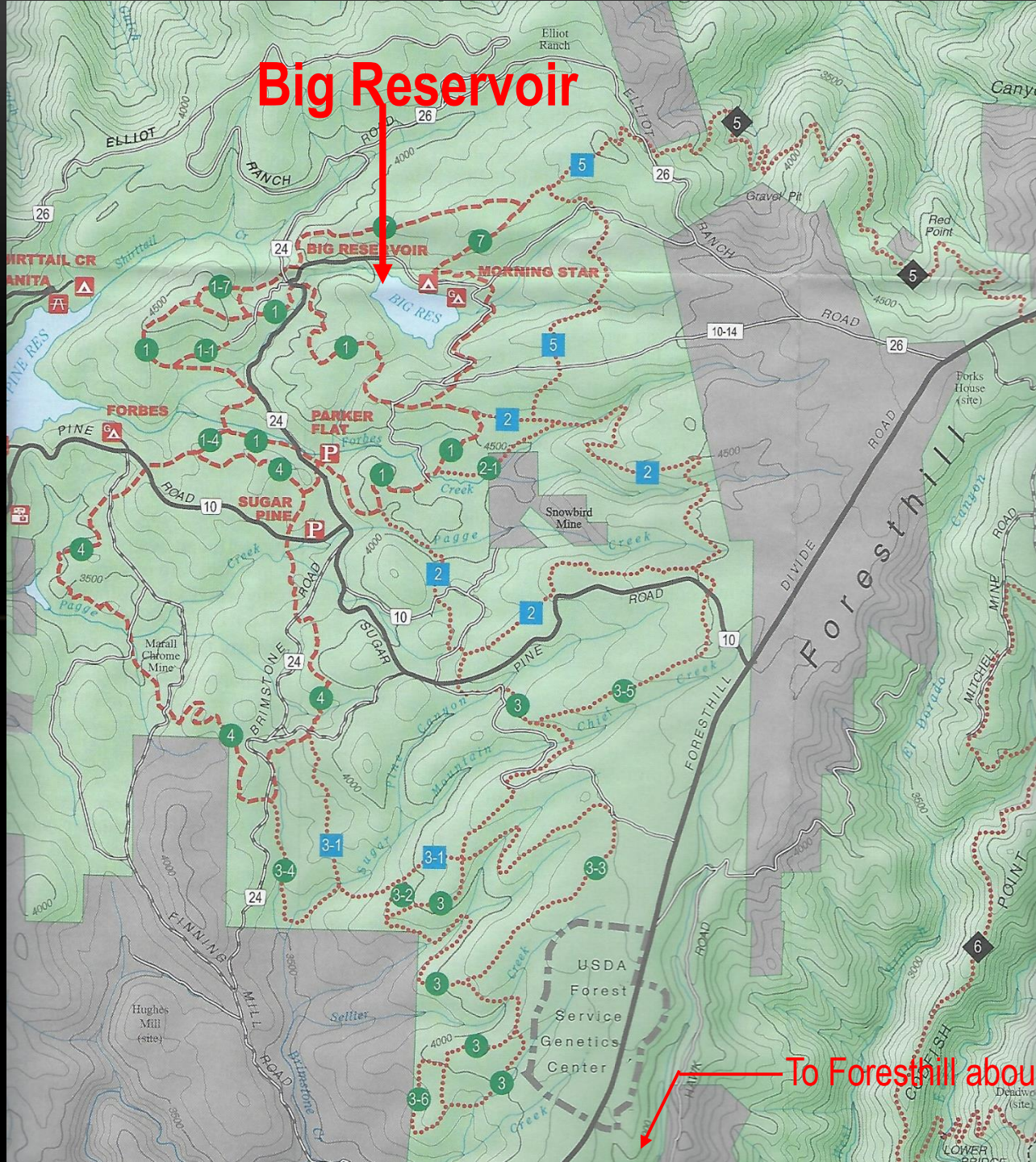








# Big Reservoir



To Foresthill about 12 miles



# 1961 – Big Reservoir Terracing Site Prep





# 1967 – Big Reservoir





# 1967 – Big Reservoir





# Summary of treatments leading up to the “Good”

## The Bad

Volcano Fire August 1960

## The Ugly

Site Prep – 1961 to late 1970’s

Planting – 1962 to late 1970’s

Release - 1962 to late 1970’s

Hydro-Ax – 1975 to mid 80’s

## The Good

Next part of program

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# 1967 – Big Reservoir





# 2006 – Big Reservoir





# 2006 – Big Reservoir





# 2006 – Big Reservoir





# 2006 – Big Reservoir







**A special thank  
you to S.P.I. and  
especially**

**Glen Rouse**

**For a great day in  
the woods using  
the S.P.I. drone to  
capture the  
images that  
follow**













**Elliot Ranch LOGS Study**

The objective of the Level-of-Domestic Stock (LOGS) study is to determine a long-term domestic stock use recommendation and water availability plan maintained by U.S. Forest Service Research Stations.

Elliot Ranch was established in 1870 on a 200-acre allotment.

Five research plots (LOGS Study) are 20, 20, 200, 1.85, and 1.60 acres. The plots were re-thinned & stocked by 2012.





# 1967 – Big Reservoir





# August 2018 – Big Reservoir 51 Years Later



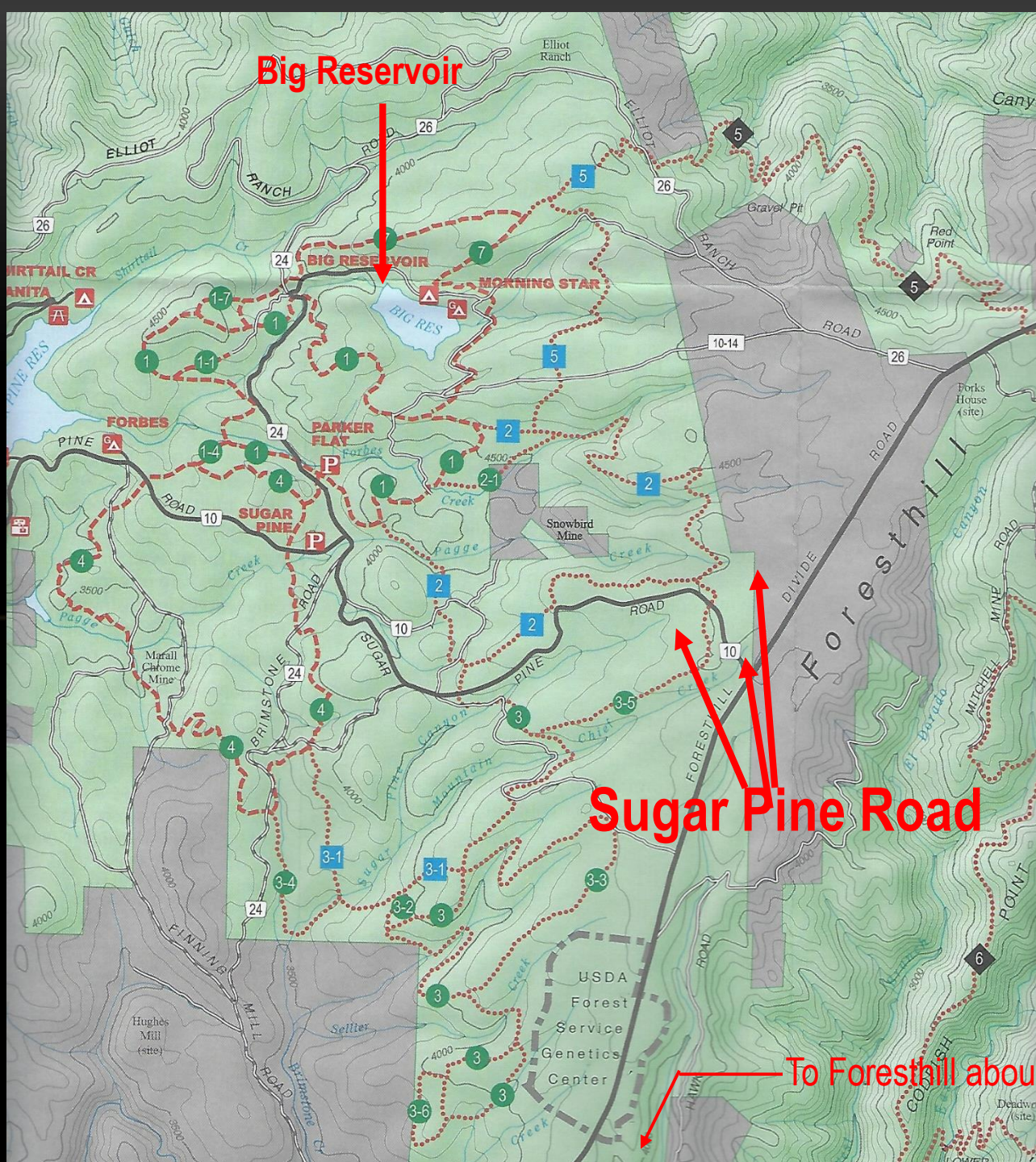


# August 2018 – Big Reservoir 51 Years Later





**Big Reservoir**



**Sugar Pine Road**

To Foresthill about 12 miles

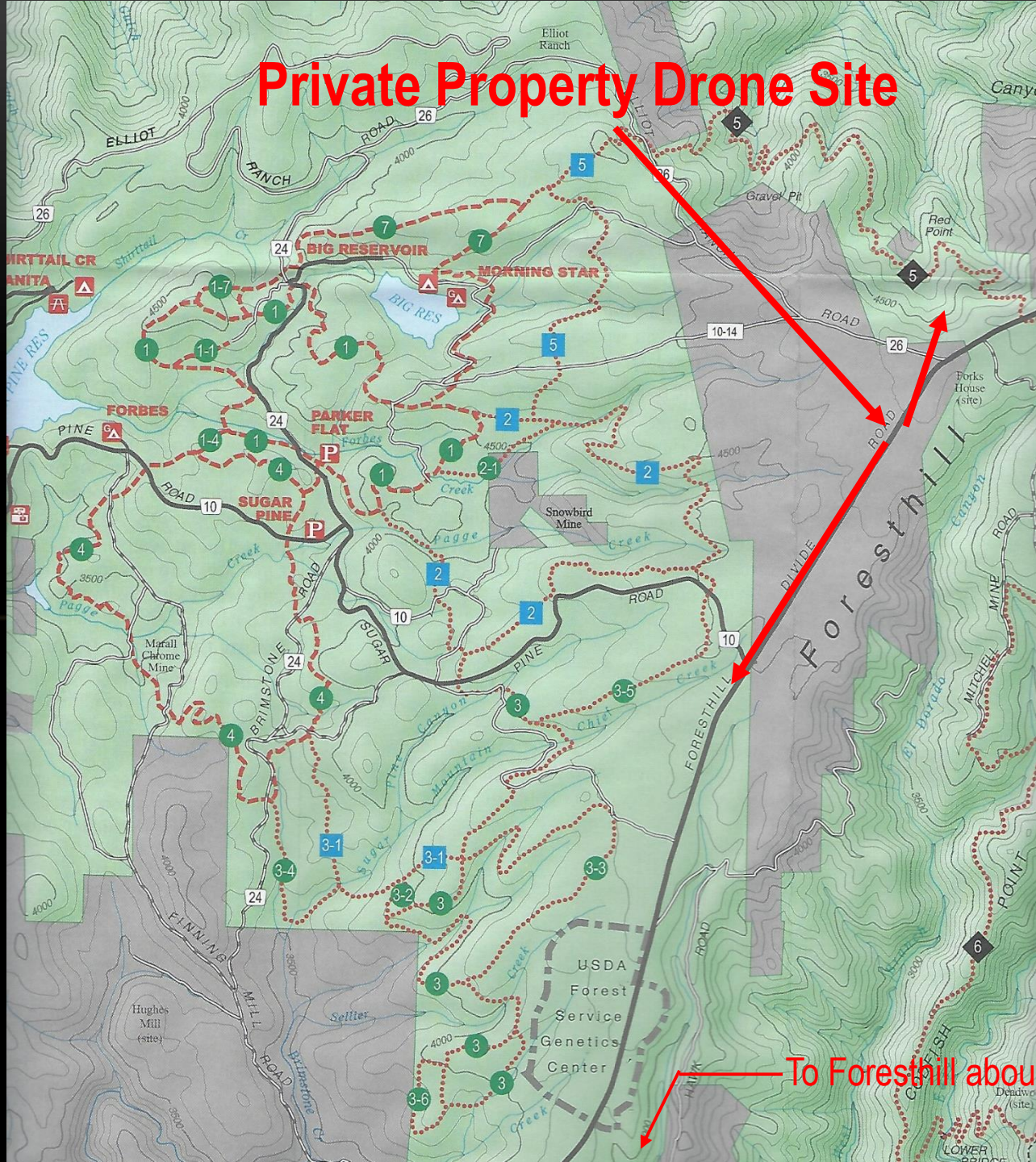


2018 – “The Good” 56 years after first  
initial planting





# Private Property Drone Site



To Foresthill about 12 miles



2012





2012







**2012**



# No Brush Control 57 years after Volcano Fire August, 2018

















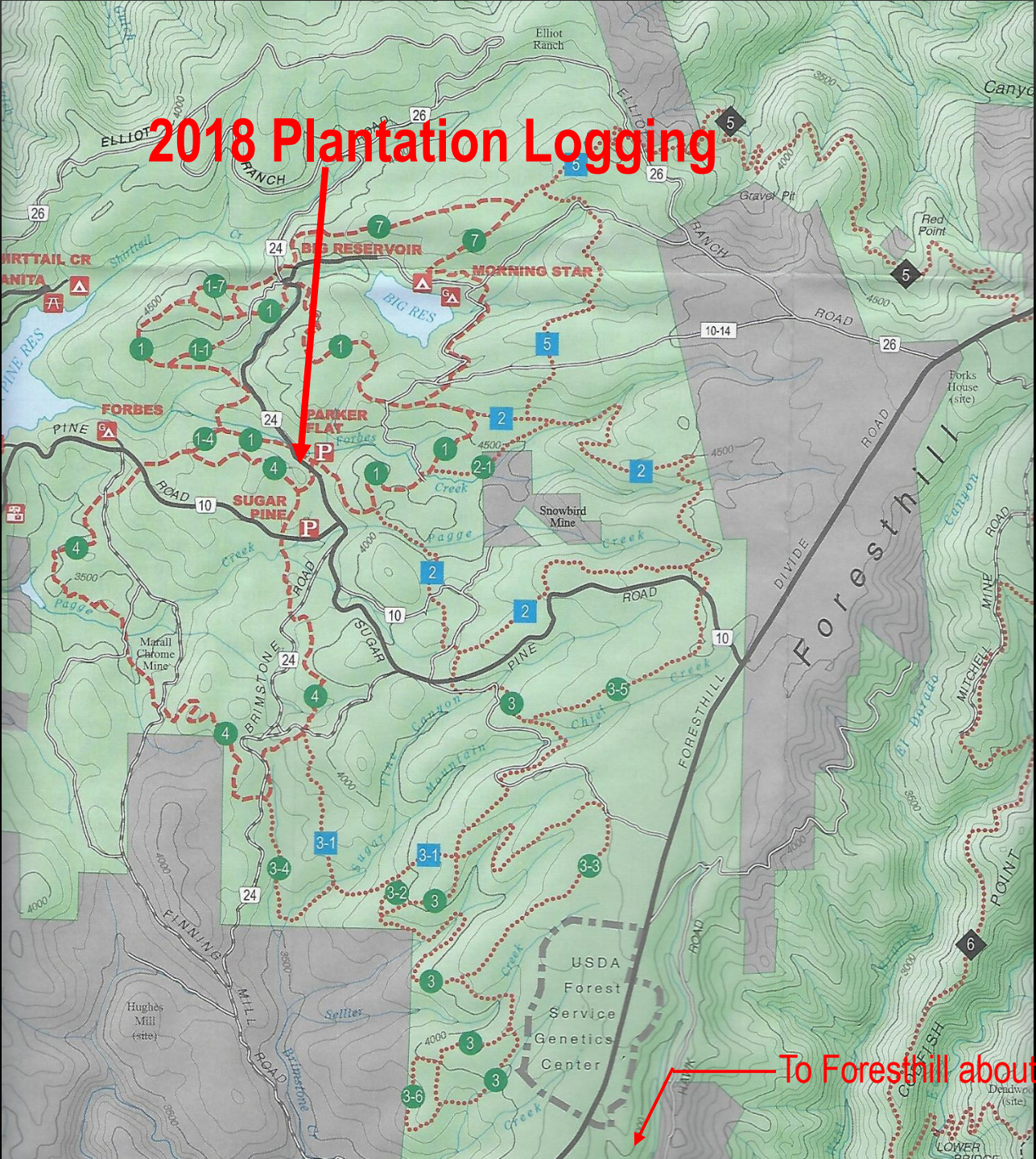








# 2018 Plantation Logging



To Foresthill about 12 miles



# Commercial Thinning August, 2018





**The Good**  
**is more than**  
**planting**  
**and growing trees**

**It is also a place**  
**to learn**

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**Bill Oliver, PSW**





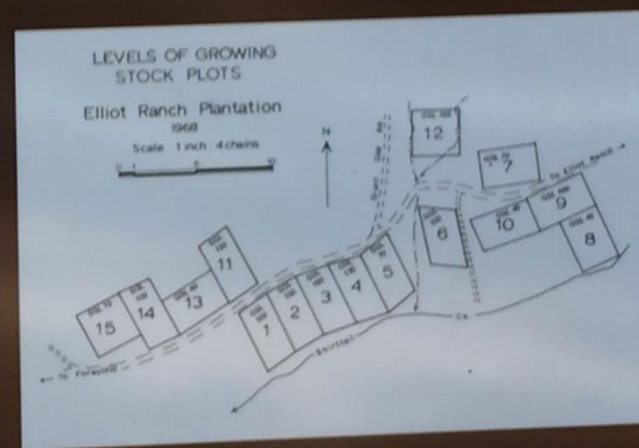
# 1950 Elliot Ranch Plantation in 1959





# Elliot Ranch LOGS Study

- The objective of the Level-of-Growing-Stock (LOGS) study is to determine a long-term density effect on ponderosa pine stand development. Six installations across the western U.S. were installed and maintained by U.S. Forest Service Research Stations
- Elliot Ranch was established in 1970 on a 20-yr-old plantation
- Plot size: 0.5 acres
- Five original growing stock levels (GSL): 40, 70, 100, 130, and 160 sq. ft. per ac. were randomly assigned to 15 plots
- The plots were re-thinned 4 times by 2014





# 2004 Elliot Ranch 40 GSL





# 2004 Elliot Ranch 70 GSL





# 2004 Elliot Ranch 100 GSL

GSL

100



# 2004 Elliot Ranch 100 GSL





2004 Elliot Ranch 130 GSL



GSL

130



# 2004 Elliot Ranch 130 GSL





# 2004 Elliot Ranch 160 GSL

A wooden sign is mounted on a vertical wooden post in a forest. The sign is rectangular and light-colored wood, with the letters 'GSL' and the number '160' printed in black. Two silver screws are visible, one at the top and one at the bottom of the sign. The background is a blurred forest with many thin tree trunks and green foliage.

GSL

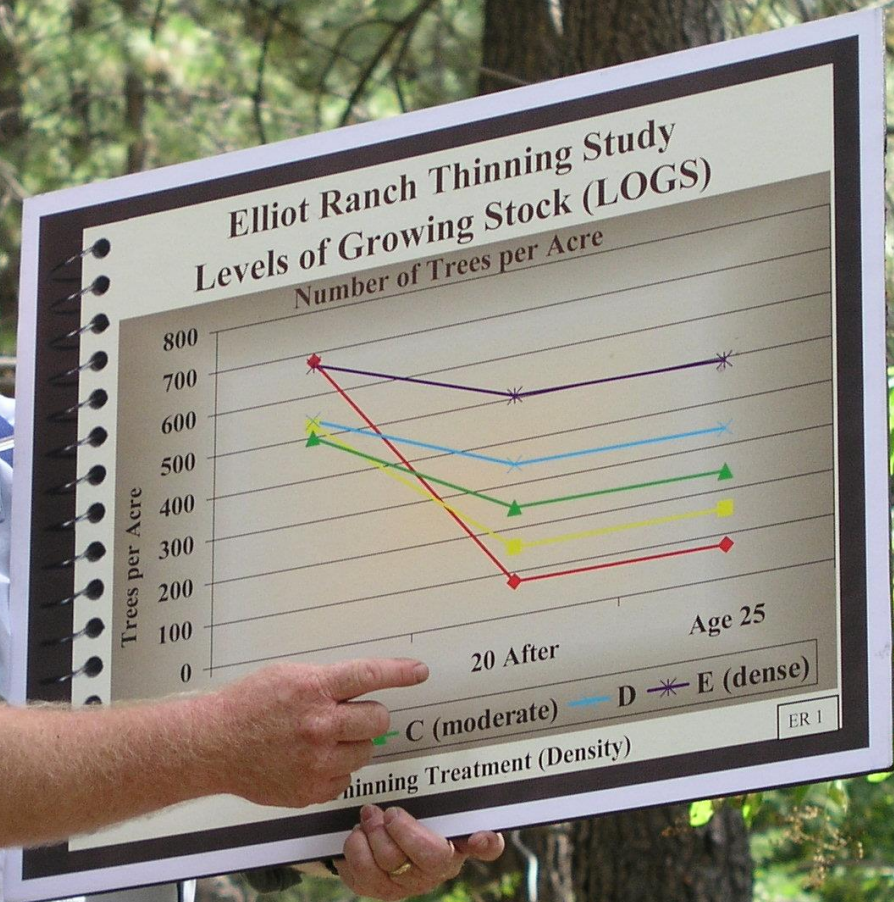
160



# 2004 Elliot Ranch 160 GSL







Ed Murphy, SPI - 2004



**USDA Forest Service Gen. Tech. Rep.  
PSW-GTR-198. 2005**

**Bill Oliver, USFS, Retired**

**Elliot Ranch LOGS Study: Can an old  
experiment tell a new story?**

**Jianwei Zhang, William Oliver, & Martin Ritchie PSW  
Research Station Redding, California**





Off the wall  
thinking and  
experimentation

To Foresthill about 12 miles





**Serpentine Soils**



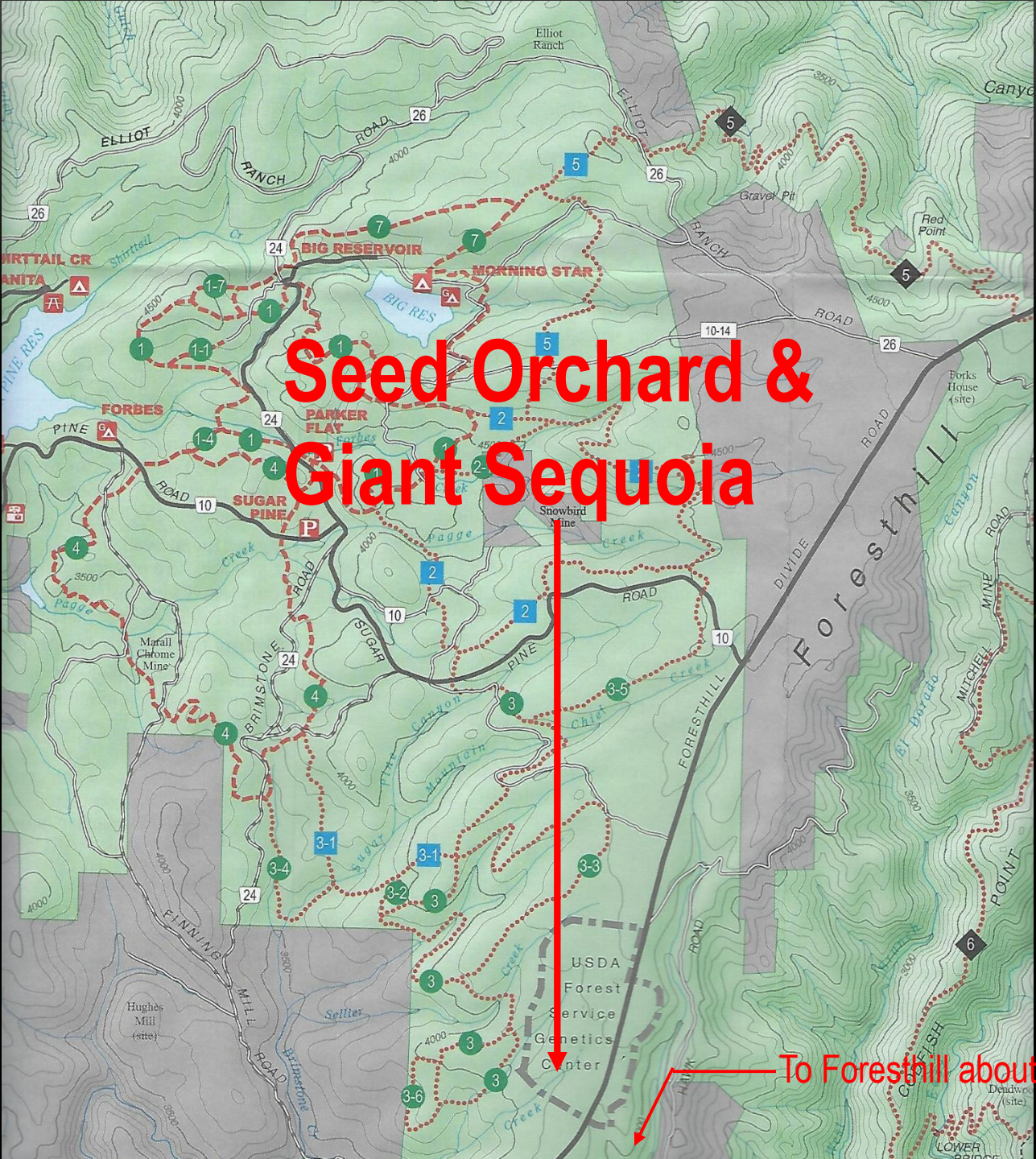








# Seed Orchard & Giant Sequoia



To Foresthill about 12 miles



# Foresthill Seed Orchard and Genetics Center







**Dr. Bill Libby**



**Dr. Lauren Fins**





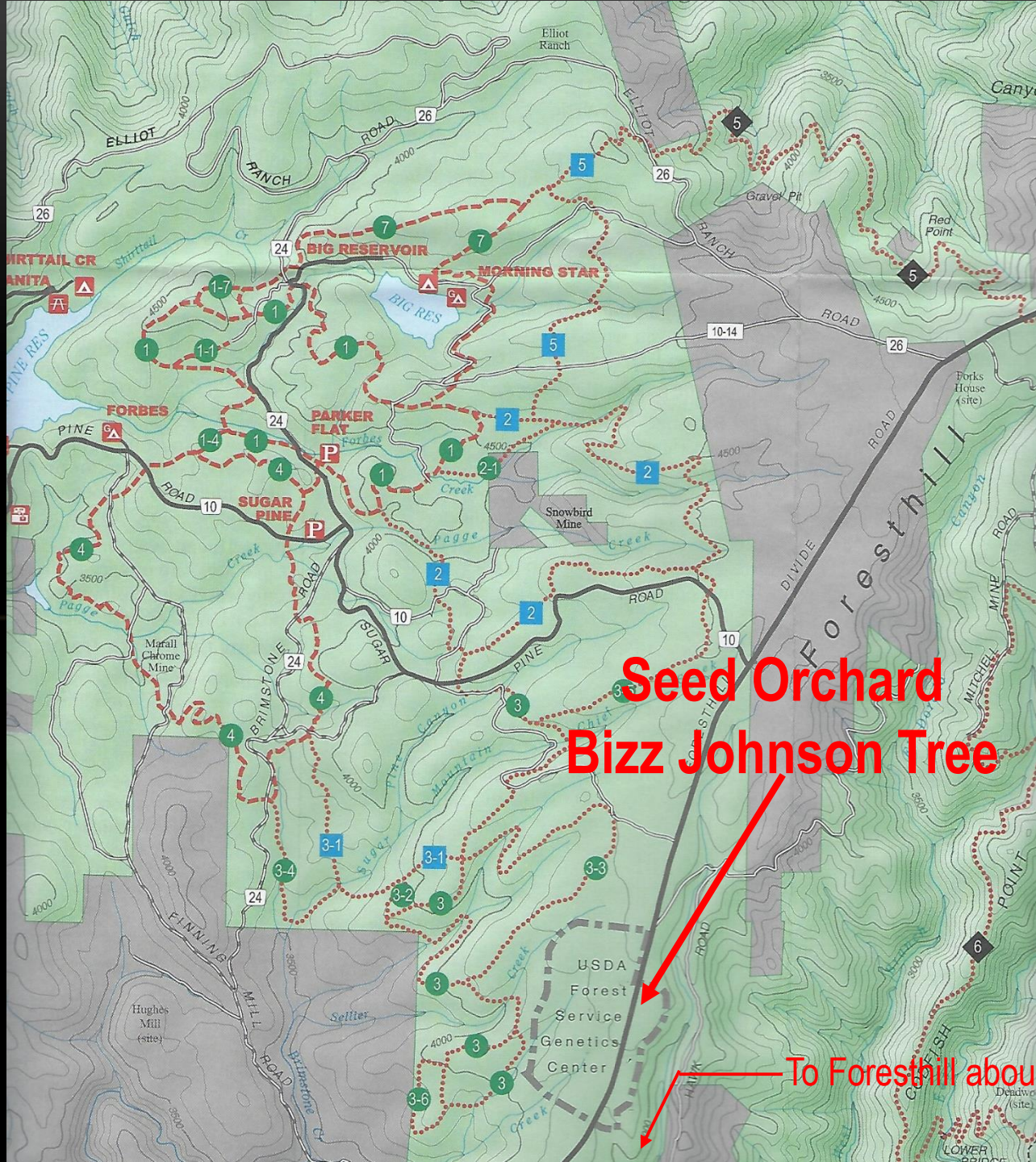












**Seed Orchard  
Bizz Johnson Tree**

To Foresthill about 12 miles





Harold "Bizz" Johnson

11 Term Congressman from  
Northern California

Congressman 2<sup>nd</sup> District  
Jan 3, 1959 to Jan 3, 1975

Congressman 1<sup>st</sup> District  
Jan 3, 1975 – Jan 3, 1980

Chairman of the House Committee  
on Public Works





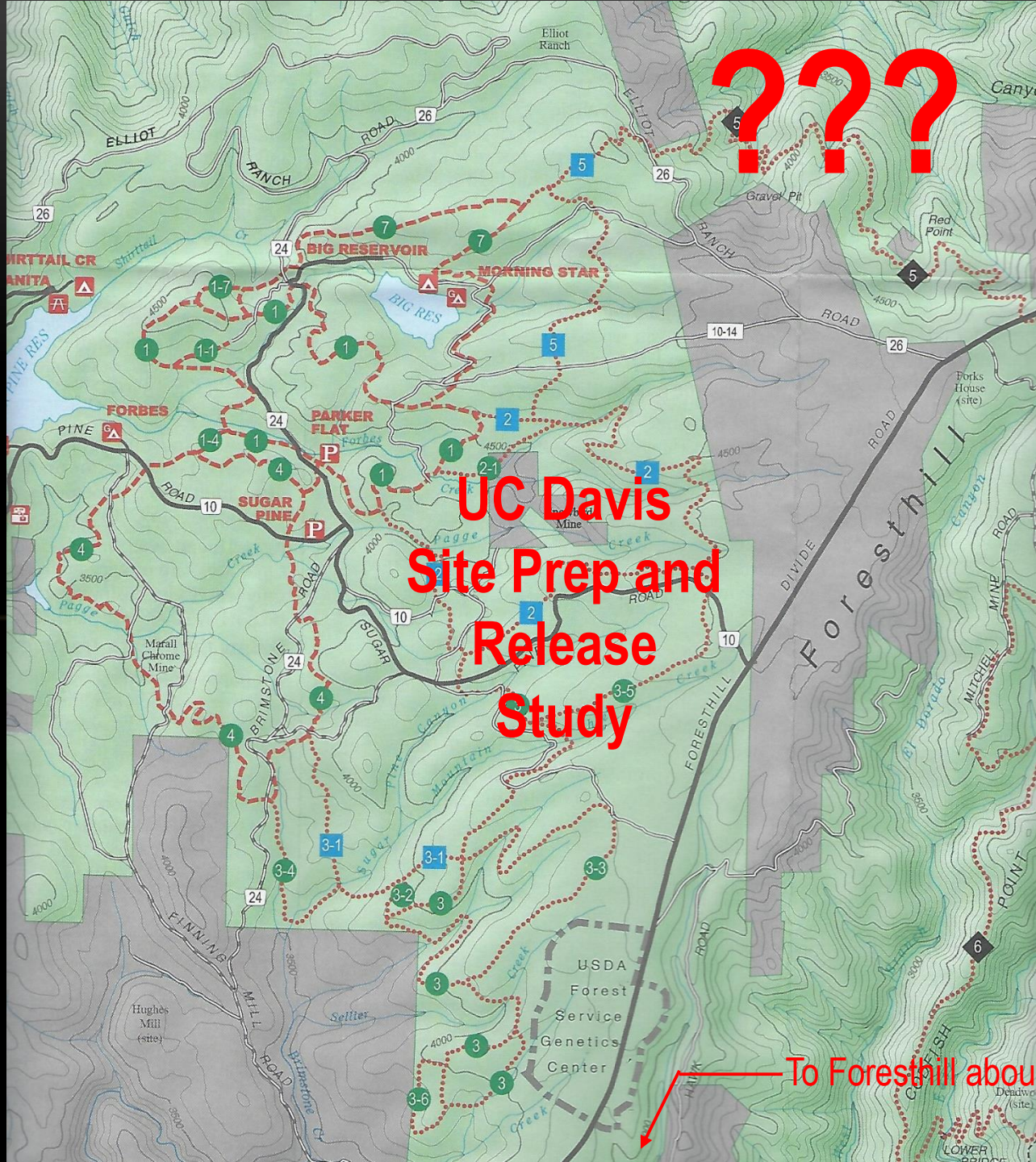
# Harold "Bizz" Johnson Tree In 2012

Planted in 1976

Quarter Billionth Tree  
Planted by USFS







???

# UC Davis Site Prep and Release Study

To Foresthill about 12 miles



**RESPONSE OF THREE CONIFER  
SPECIES TO 3 LEVELS OF SITE  
PREPARATION AND  
SUBSEQUENT RELEASE**

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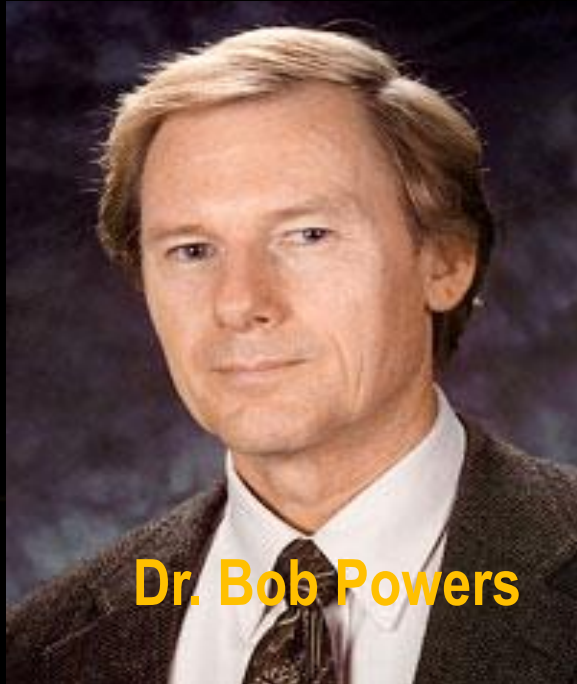
**Dr. W. Thomas Lanini**



**Dr. Steve Radosevich**



**Dr. Bob Powers**



**Yours Truly**









# 1978 Foresthill Site Preparation Experiment

W. Tom Lanini, U.C. Davis

- Brush cleared in 1978 – brushrake, Hydro-ax, fire
- Ponderosa pine, sugar pine and white fir planted in May 1979
- Release treatments applied in the fall 1979 and 1980



## Early Conclusions

**Survival:** Both white fir and ponderosa pine survival was better in brushraked plots and least in fire prepared plots. Both white fir and ponderosa pine survival was improved with two herbicide treatments to remove shrub competition.

**Growth:** White fir and Ponderosa pine grew taller and wider with greater shrub control during the first two years after conifer planting, indicating early shrub control was more important than site preparation method.



# MEASUREMENTS MADE IN 2000

- **Conifer survival**
  - **Conifer height**
  - **Conifer diameter (dbh)**
  - **Height from ground to conifer canopy**
  - **Shrub composition**
  - **Shrub Volume**
-



## EFFECTS OF SITE PREP ON PONDEROSA PINE

Diameter growth of ponderosa pine was not influenced by the site preparation method, but the subsequent herbicide treatments reduced shrub growth and allowed more resources for ponderosa pine growth.



# EFFECTS ON HEIGHT GROWTH

Height of ponderosa pine and white fir were not statistically significant among site preparation methods, but varied by the number of herbicide treatments.

When no herbicide treatments were applied, Ponderosa pine height was 5.7m, while a single herbicide treatment increased height by 30% and two applications by over 75%.

Height of white fir increased by about 10% with a single herbicide treatment and by over 50% with two herbicide treatments



# Conclusions

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*Lots of Success Stories and Historical Evidence Showing that...*

**Planted forests are our best hope for meeting wood demands while preserving natural forests.**

**Disputing this implies ignorance or arrogance.**



*Volcano Fire Restoration from 1960 to 2018  
Is a great Story and Historical Evidence  
Showing that...*

**Controlling woody brush and other  
competitive plants is the only way  
to reforest and restore California's  
Forests!**

**Disputing this implies  
ignorance or arrogance.**



**Thank You for  
Your Interest  
and Attention**