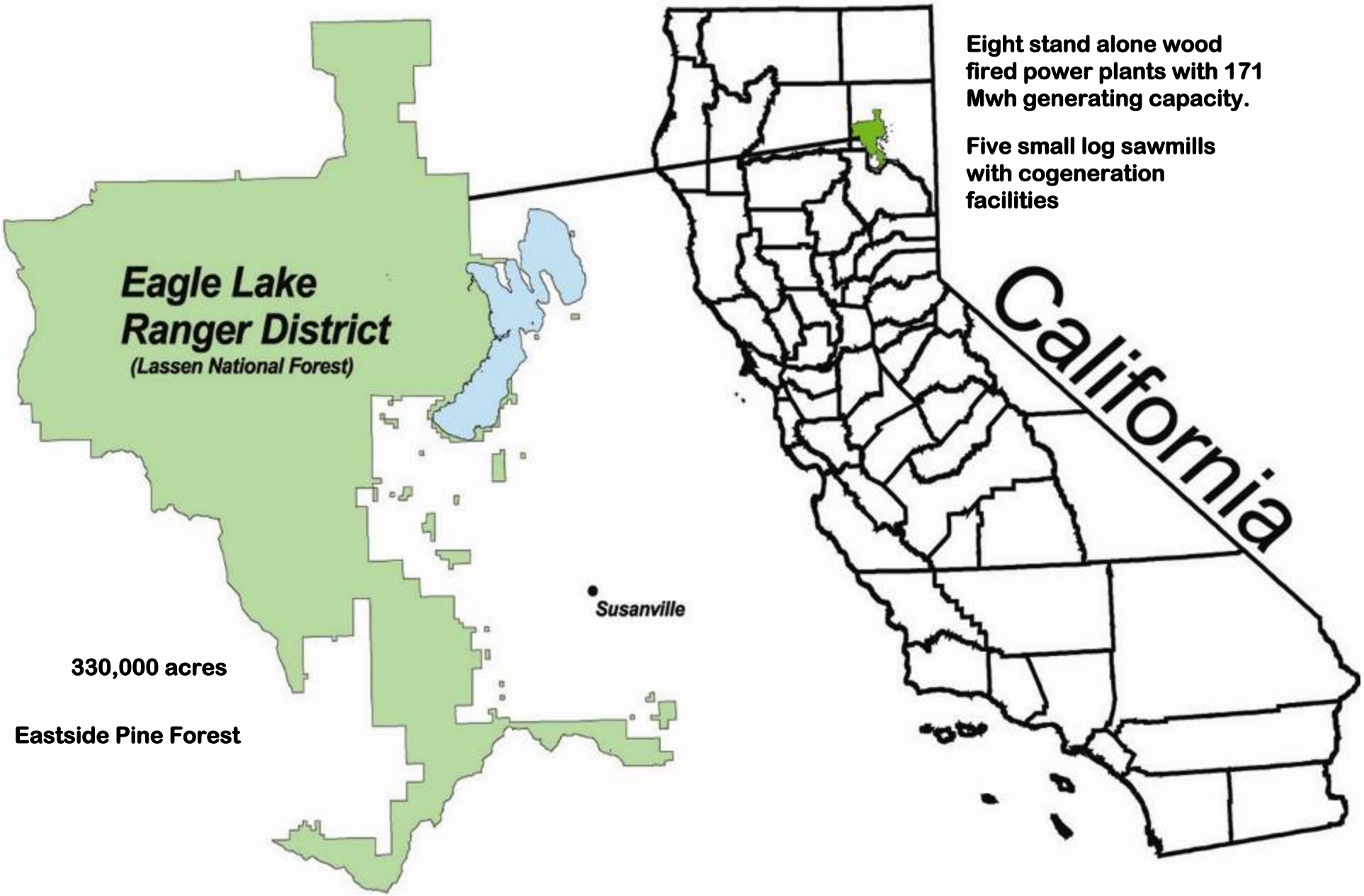
Federal Land Perspective

Ecological Restoration and Fuels Reduction

West side of Crater Mountain – 1915
Lassen National Forest
Eagle Lake Ranger District

General Vicinity



Eight stand alone wood fired power plants with 171 Mwh generating capacity.

Five small log sawmills with cogeneration facilities

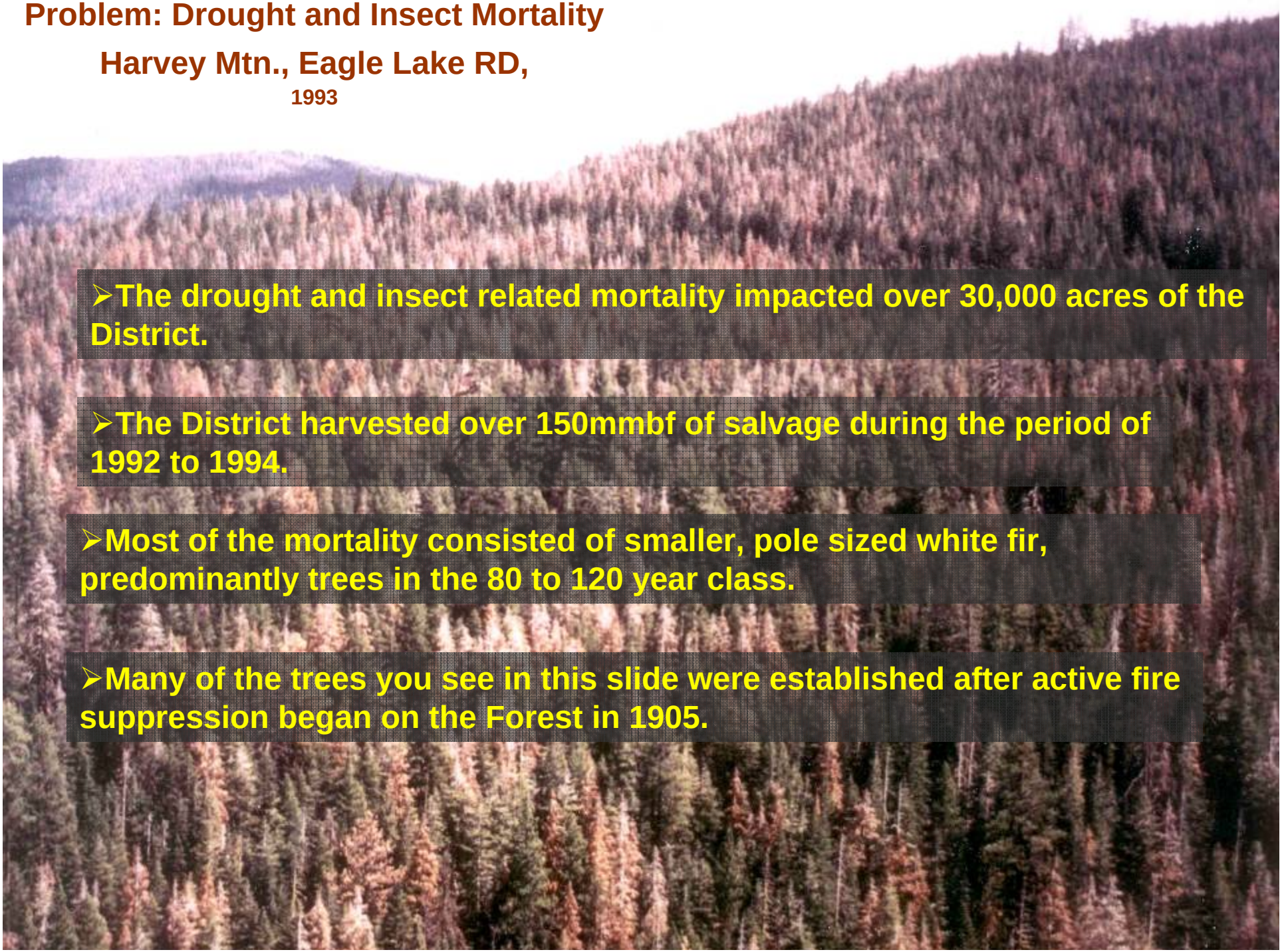
330,000 acres

Eastside Pine Forest

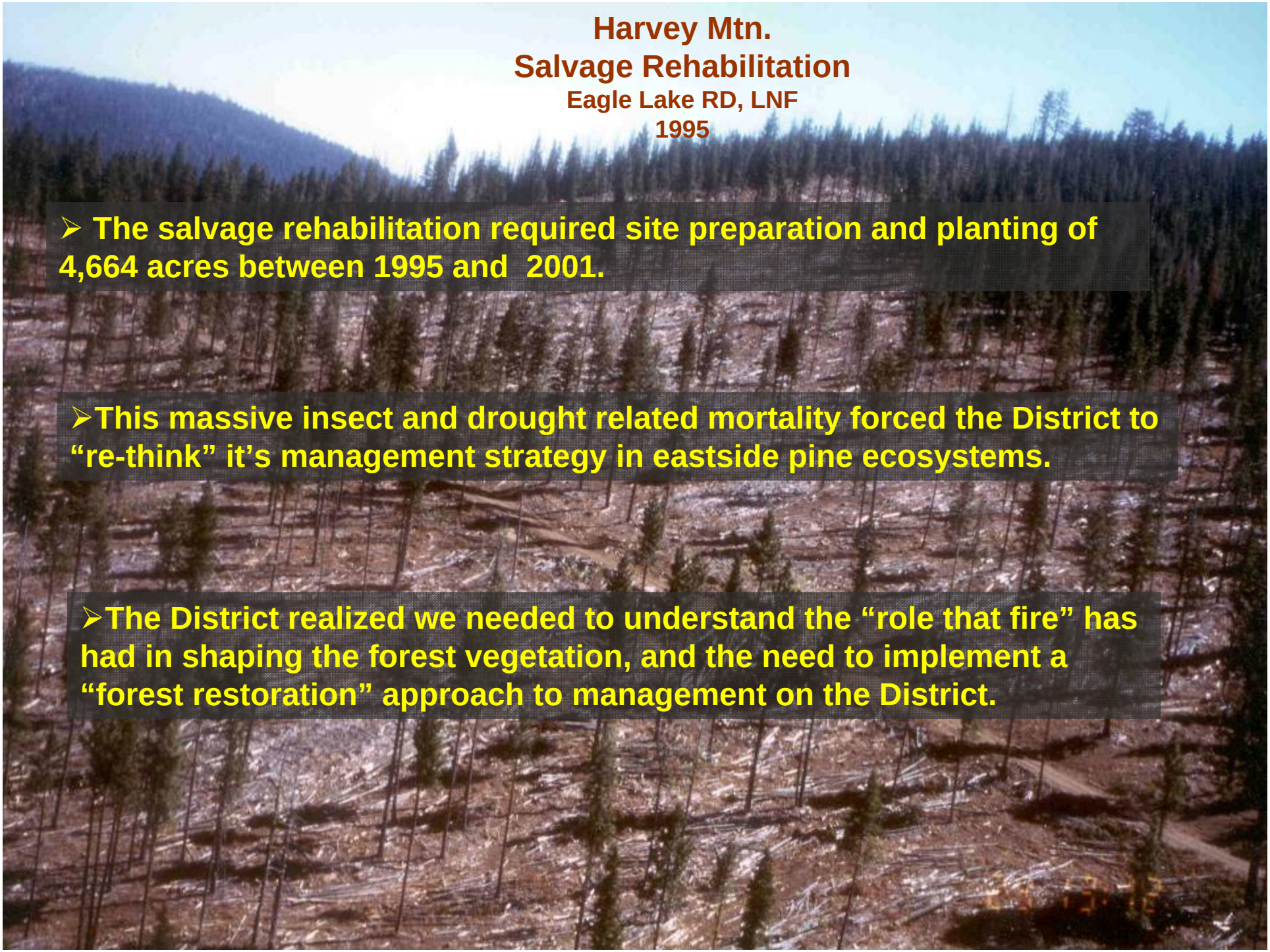
Problem: Drought and Insect Mortality

Harvey Mtn., Eagle Lake RD,

1993



- The drought and insect related mortality impacted over 30,000 acres of the District.
- The District harvested over 150mmbf of salvage during the period of 1992 to 1994.
- Most of the mortality consisted of smaller, pole sized white fir, predominantly trees in the 80 to 120 year class.
- Many of the trees you see in this slide were established after active fire suppression began on the Forest in 1905.



Harvey Mtn.
Salvage Rehabilitation
Eagle Lake RD, LNF
1995

- The salvage rehabilitation required site preparation and planting of 4,664 acres between 1995 and 2001.

- This massive insect and drought related mortality forced the District to "re-think" it's management strategy in eastside pine ecosystems.

- The District realized we needed to understand the "role that fire" has had in shaping the forest vegetation, and the need to implement a "forest restoration" approach to management on the District.

Research

- The disturbance regime of frequent low intensity fires is now outside the historic range of variability. Prior to fire suppression, the frequent, low intensity fire return interval (grand mean) for **PP** was **14.4** years **25.6** years for **MC** on ELRD.

- Invaded meadows are "unnatural" and candidates for restoration. Prior to fire suppression, the frequent, low intensity fire return interval (grand mean) along **meadows** was **7.6** years.

- Lower altitude (pine flats) forests have changed dramatically and **only management will restore them** to a more natural condition.

(Taylor 1990, 1997, 1999)

Weislander/Taylor No. 3a

Mid-1920's

Weislander/Taylor No. 3b

Mid 1990s


1920


1990

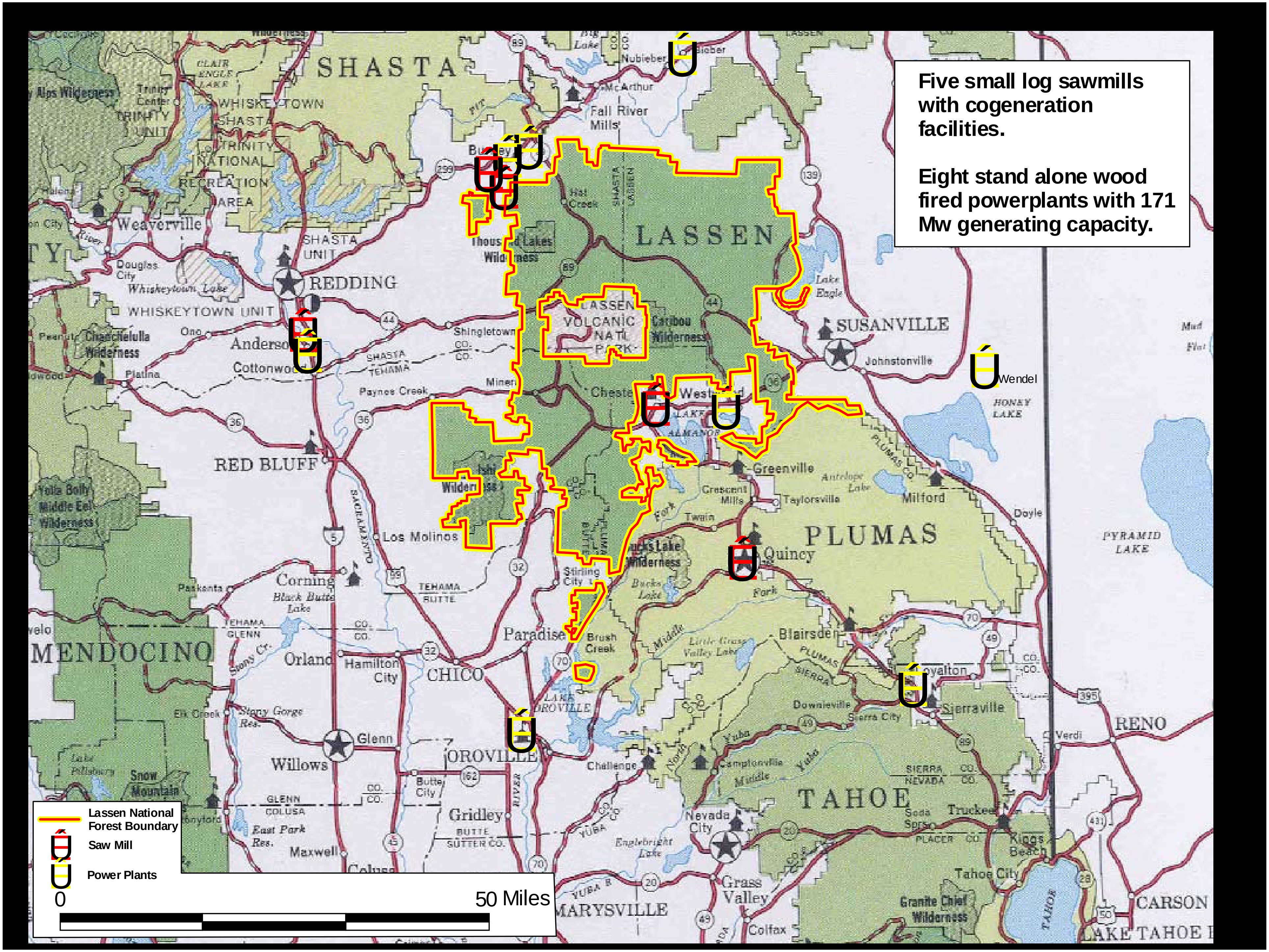
Rx Fire or Mechanical Thinning?

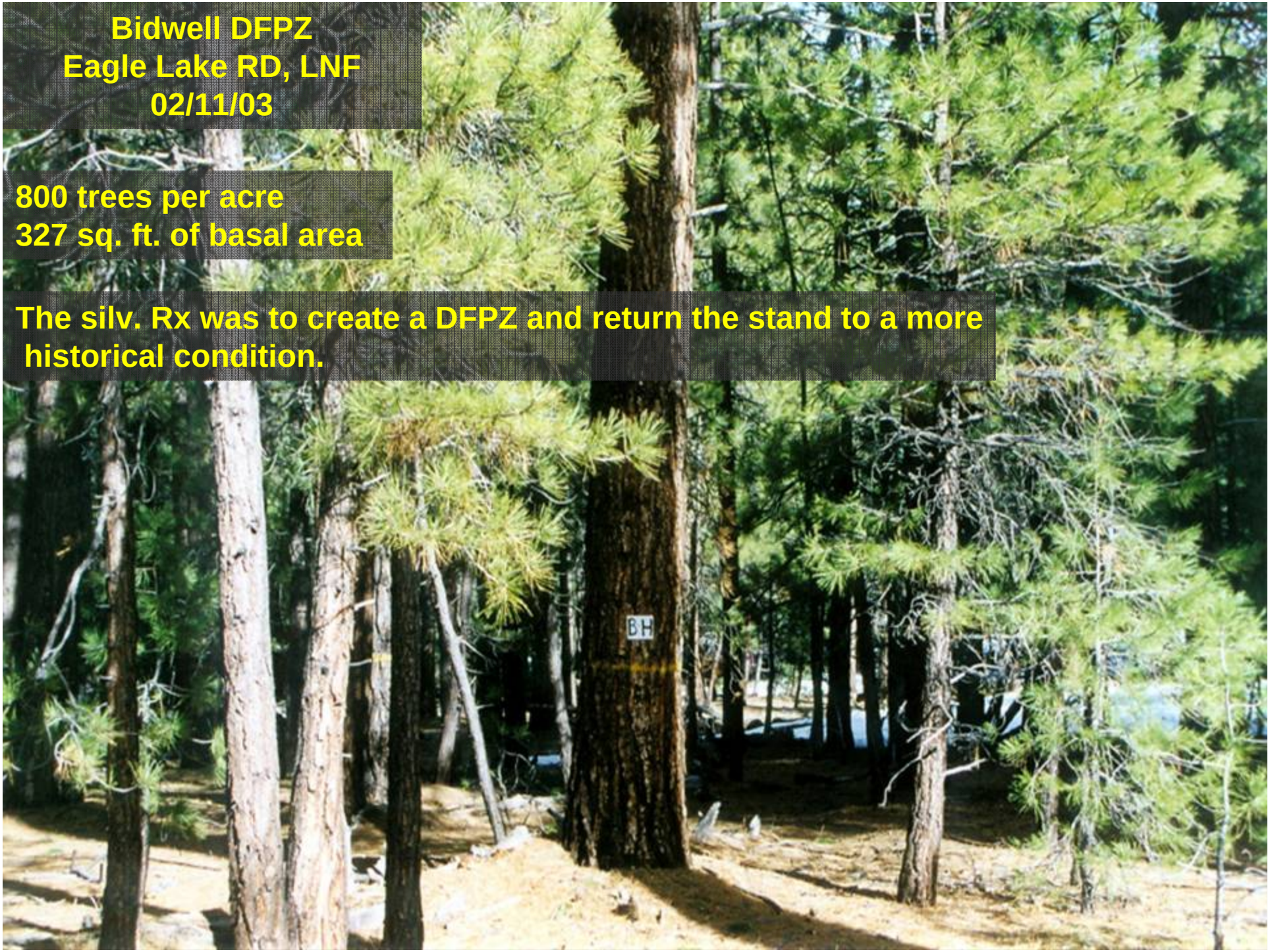
- "Returning fire into dense stands …could fatally damage already stressed overstory trees,…restoring ponderosa pine forests to more healthy and sustainable conditions will generally require some kind of silvicultural cutting.

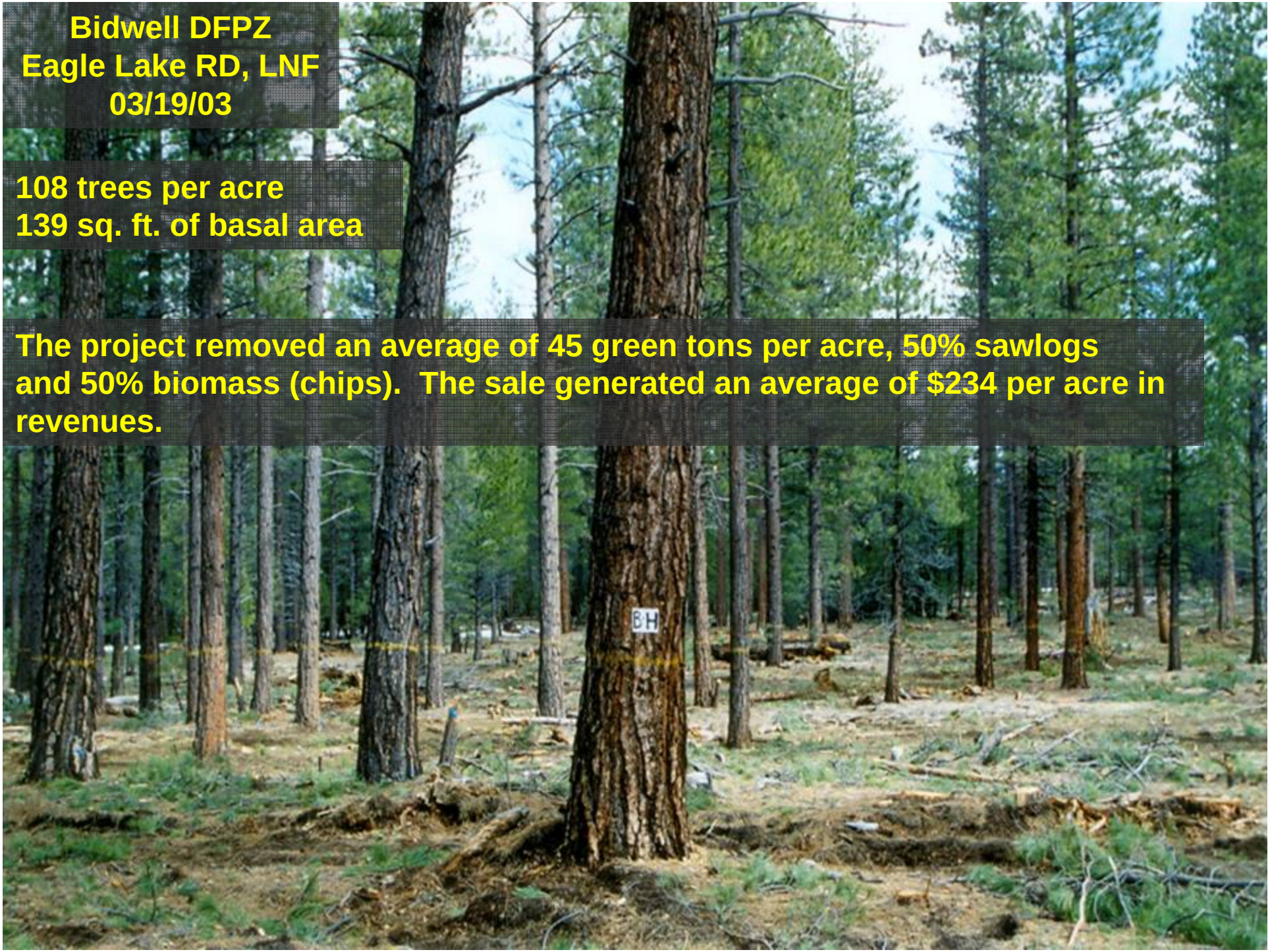
  (Arno 1996)

- "Because of the excessive stocking of mid-sized trees, returning fire without prepatory silvicultural cutting would either be ineffective (failing to thin the stand) or too destructive (causing mass mortality)".
  (Arno and Harrington 1999)

A Solution: “Getting it Done”

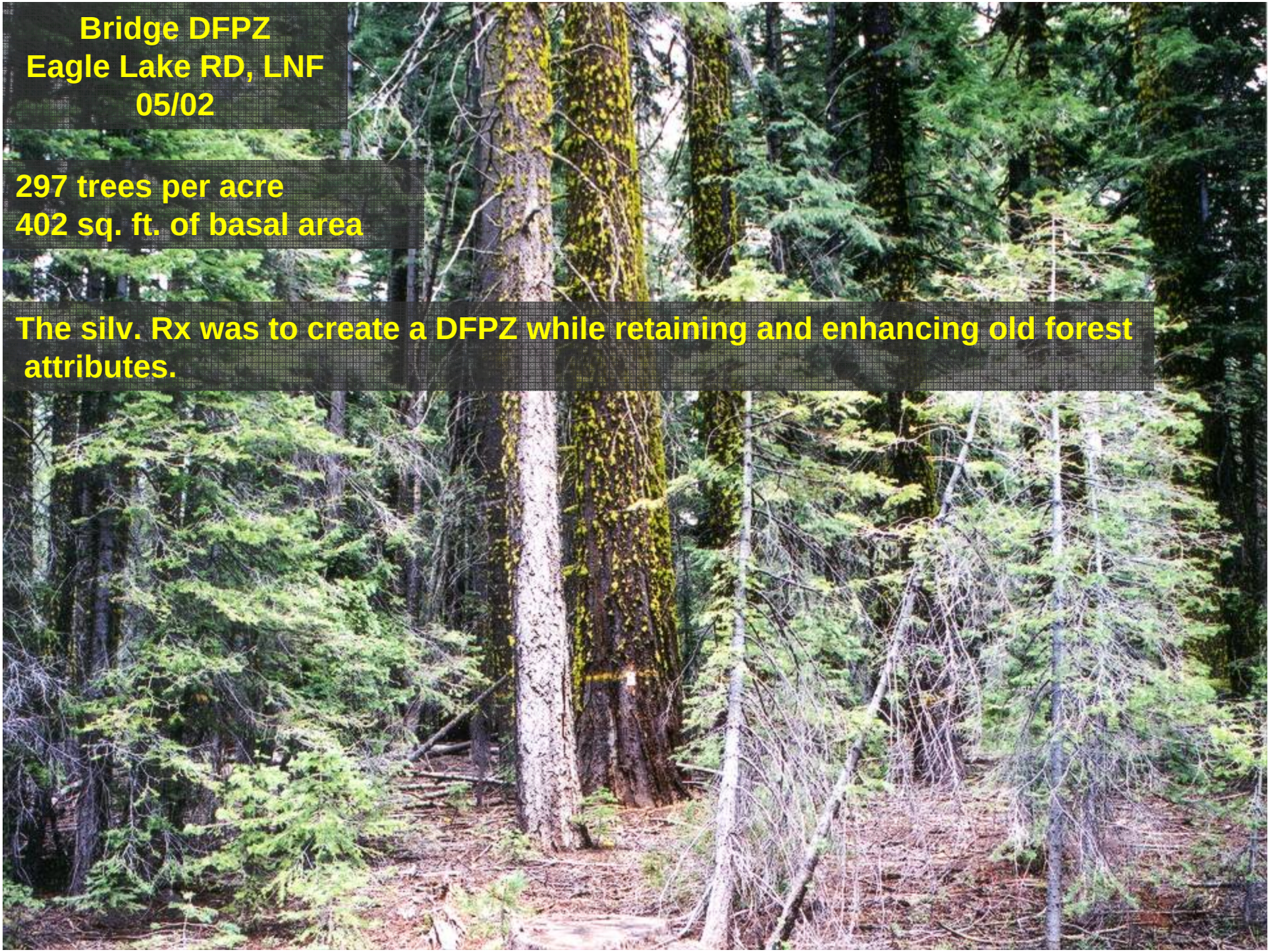

Five small log sawmills with cogeneration facilities.
Eight stand alone wood fired powerplants with 171 Mw generating capacity.
Lassen National Forest Boundary
Saw Mill
Power Plants
0
50 Miles
SHASTA
LASSEN
PLUMAS
TAHOE
MENDOCINO
LASSEN VOLCANIC NAT'L PARK
REDDING
SUSANVILLE
RED BLUFF
CHICO
OROVILLE
RENO
CARSON
MARYSVILLE
Wendel
Nubieber
McArthur
Fall River Mills
Burney
Weaverville
Anderson
Cottonwood
Shingletown
Chester
Westwood
Greenville
Quincy
Loyalton
Sierraville
Los Molinos
Corning
Orland
Paradise
Willows
Gridley
Truckee
Nevada City
Grass Valley
Johnstonville
Milford
Doyle
HONEY LAKE
PYRAMID LAKE
Lake Almanor
Susanville
Crescent Mills
Taylorsville
Blairsden
Downieville
Sierra City
Tahoe City
Kings Beach
LAKE TAHOE

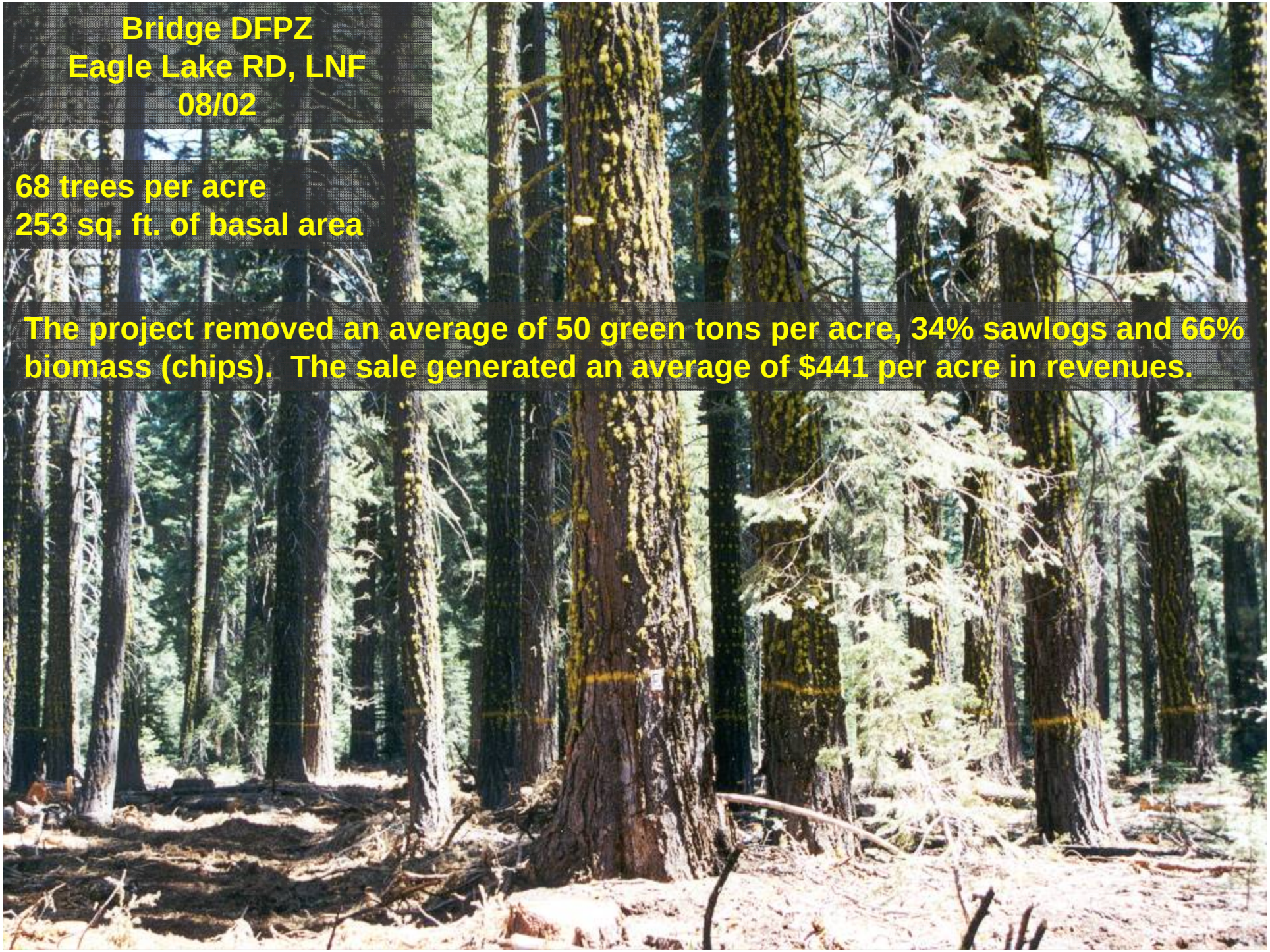

Bidwell DFPZ
Eagle Lake RD, LNF
02/11/03
800 trees per acre
327 sq. ft. of basal area
The silv. Rx was to create a DFPZ and return the stand to a more historical condition.
BH


Bidwell DFPZ
Eagle Lake RD, LNF
03/19/03
108 trees per acre
139 sq. ft. of basal area
The project removed an average of 45 green tons per acre, 50% sawlogs and 50% biomass (chips). The sale generated an average of $234 per acre in revenues.
BH


Bidwell DFPZ
800 T.P.A.
327 sq. ft. B.A.
02/11/03

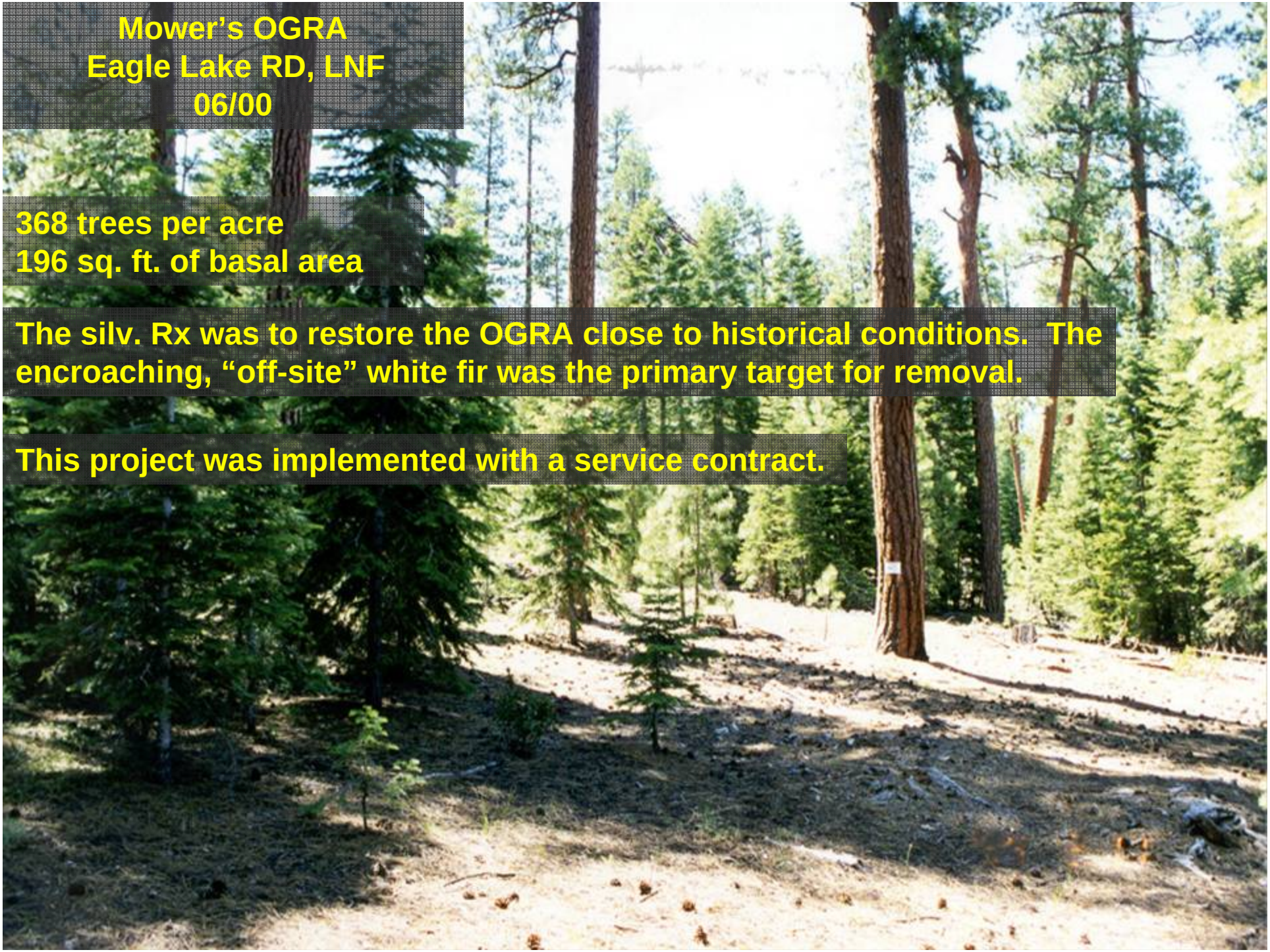

Bidwell DFPZ
108 T.P.A.
139 sq. ft. B.A.
03/19/03


Bridge DFPZ
Eagle Lake RD, LNF
05/02
297 trees per acre
402 sq. ft. of basal area
The silv. Rx was to create a DFPZ while retaining and enhancing old forest attributes.


Bridge DFPZ
Eagle Lake RD, LNF
08/02
68 trees per acre
253 sq. ft. of basal area
The project removed an average of 50 green tons per acre, 34% sawlogs and 66% biomass (chips). The sale generated an average of $441 per acre in revenues.


Bridge DFPZ
297 T.P.A.
402 sq. ft. B.A.
05/02


Bridge DFPZ
68 T.P.A.
253 sq. ft. B.A.
08/02


Mower's OGRA
Eagle Lake RD, LNF
06/00
368 trees per acre
196 sq. ft. of basal area
The silv. Rx was to restore the OGRA close to historical conditions. The encroaching, "off-site" white fir was the primary target for removal.
This project was implemented with a service contract.


Mower's OGRA
(Photo Point 4C)
Eagle Lake RD, LNF
08/00
36 trees per acre
162 sq. ft. of basal area
The project removed an average of 23 green tons per acre, 35% sawlogs and 65% biomass (chips). The contractor was paid $129.32 per acre to treat the stand.


Mower's OGRA
368 T.P.A., 196 sq. ft. of B.A.
06/00


Mower's OGRA
36 T.P.A., 162 sq. ft. of B.A.
08/00


Cone Fire

Effects Of Wildfire In A Thinned VS Unthinned Pine Stand

Transition from untreated stand to a mechanically thinned stand 2

Mechanically thinned stand 3

Mechanically thinned stand 4

Unthinned stand 1

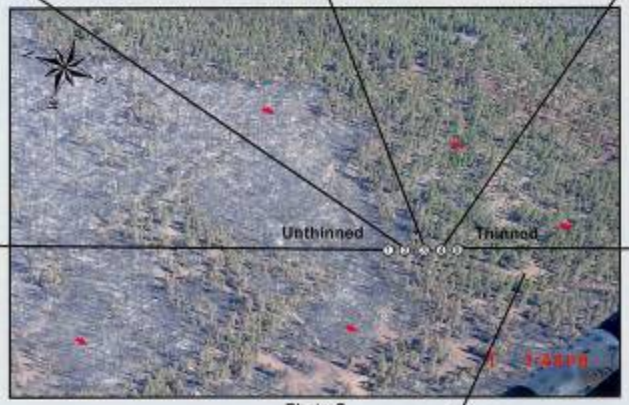
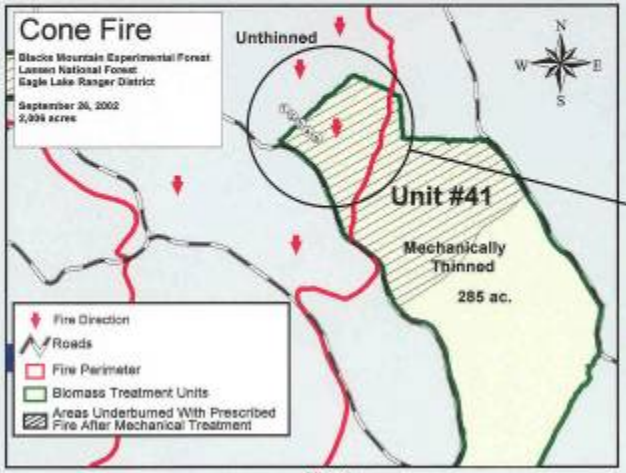


Photo C

Mechanically thinned stand 5



Map A

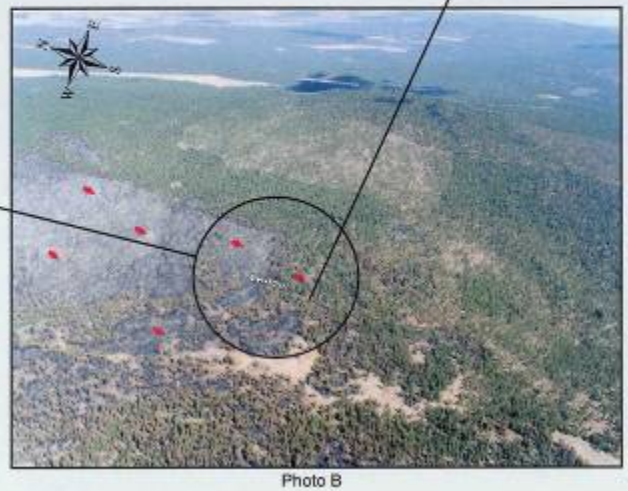


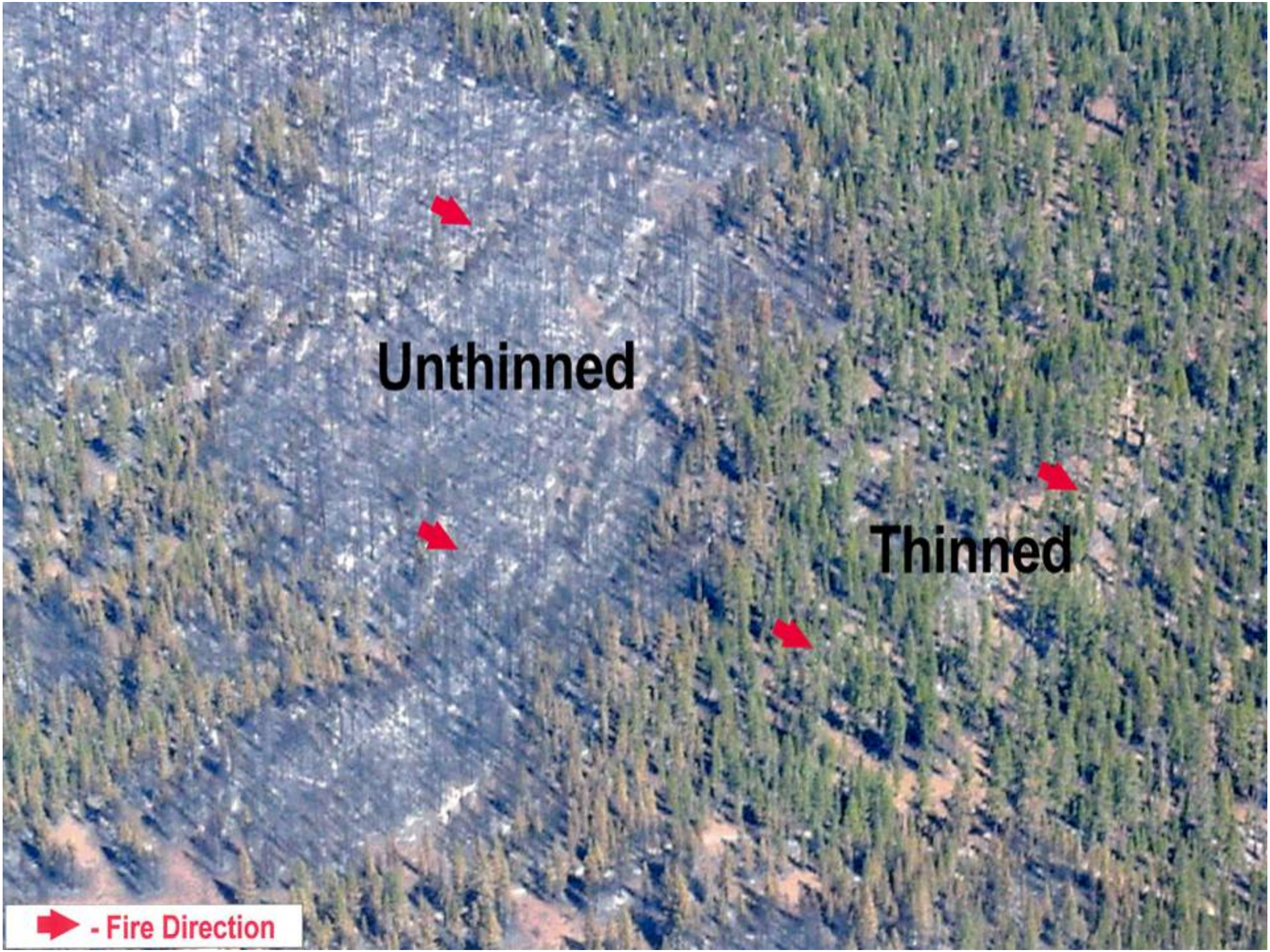
Photo B

The Cone Fire occurred September 26, 2002 within the Blacks Mountain Experimental Forest on the Lassen National Forest. The fire was 2,006 acres in size and suppression costs were approximately $3,462,204 The fire is unique in that it burned into several mechanically thinned and underburned units. The fire effects are dramatic in that it was predominately a stand replacing crown fire where most of the trees were killed by the fire. Once the fire burned into the thinned and underburned units the fire dropped to the surface and became a low intensity ground (surface) fire, with little damage to the residual trees in these units.

Photos (1) through (5) show the transition from the stand replacing fire in the unthinned areas to the low intensity ground fire in unit #41. This unit was mechanically thinned in 1996 and underburned with prescribed fire in 1997. The location of the photos are depicted in Map A and photos B and C. Photo (1) represents the effect of the crown fire in the unthinned stand, photos (2) and (3) show the transition of the fire from crown to surface and photos (4) and (5) show the effects of the fire at ground level in the mechanically thinned stand.

The suppression cost of $3,462,204 equate to $1,726 per acre. The preparation cost to mechanically thin a forested stand and underburn is approximately $204 per acre.

Prepared by: Mike Jablonski October 16, 2003
Eagle Lake Ranger District - Susanville, Ca.


Unthinned
Thinned
- Fire Direction


1
2
3
4
5
1 1:46PM


1


2


3


4


5

Cone Fire - Treatment Unit #41

Photo A

Photo B

Cone Fire S.E. Side (Treatment unit #41), where fire intensity went from a stand replacing crown fire (Photo A), to a low intensity surface fire (Photo B). The impact of the fire was dramatically reduced because of a combination of fuel treatments. The area was mechanically thinned with whole tree removal followed by a prescribed fire. (Biomass Thinned: 1996, Prescribed fire: Fall of 1997) 2002


Aspen Restoration

Butte Crk./Bidwell Aspen
Eagle Lake RD, LNF
1999

- **The Eagle Lake District has lost over 60% of it's aspen stands since grazing and fire suppression began on the Forest. Most of the remaining aspen stands are at a high risk of mortality due to conifer encroachment and excessive browsing.**

- **When ever possible, we attempt to include aspen enhancement projects within our DFPZ projects. It can make the difference between a timber sale or a service contract.**


Butte Crk./Bidwell Aspen,
Eagle Lake RD, LNF
1999
BUTTE CREEK
T4 '228'


Butte Crk./Bidwell Aspen,
Eagle Lake RD, LNF
2000
Butte
Cr. T4


Butte Crk./Bidwell Aspen,
Eagle Lake RD, LNF
2001
BUTTE CR
T4 @228°
6/7/01


Butte Crk./Bidwell Aspen,
Eagle Lake RD, LNF
2002


Butte Crk./Bidwell Aspen,
Eagle Lake RD, LNF
2003

Butte Crk./Bidwell Aspen, Eagle Lake RD, LNF 2004


1999
BUTTE CREEK


2003