

Forest Ecosystem Health & Aspen Restoration



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Forest Ecosystem Health & Aspen Restoration

- What needs to be addressed for resilience in the Basin?
 - Fuels Loading – Resilience to wildfire
 - Tree density – Resilience to insect outbreaks
 - Forest Structural Stages – Forest Sustainability
 - Drought – Resilience to warming climate
 - Diversity – Resilience to climate, fire, insects & diseases
- What are some implementation strategies?
 - Stewardship Fireshed Assessment
 - Lake Tahoe Basin Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy
 - Aspen Community Restoration
- What are some of the multiple resource benefits
 - Fire Behavior, Aspen, Wildlife Habitats, Water, Air, Scenic, Carbon

Historic Land Uses & Practices

- Comstock-era logging (1860-1920),
- Cattle and sheep grazing (1850's-1950's),
- Rapid human development (1960-1980), and
- Fire suppression (1901-present)

Resulted in: Increases in the primary risk factors to aspen stands and to the deteriorated existing condition of aspen stands at moderate or greater risk of loss from the Lake Tahoe Basin.

Slaughterhouse Canyon

1873



Photo by C.E. Watkins

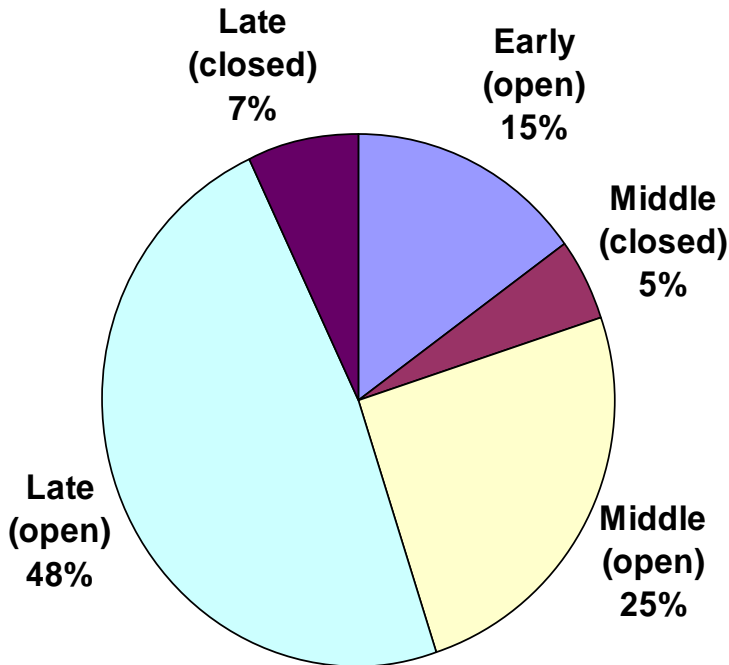
1993



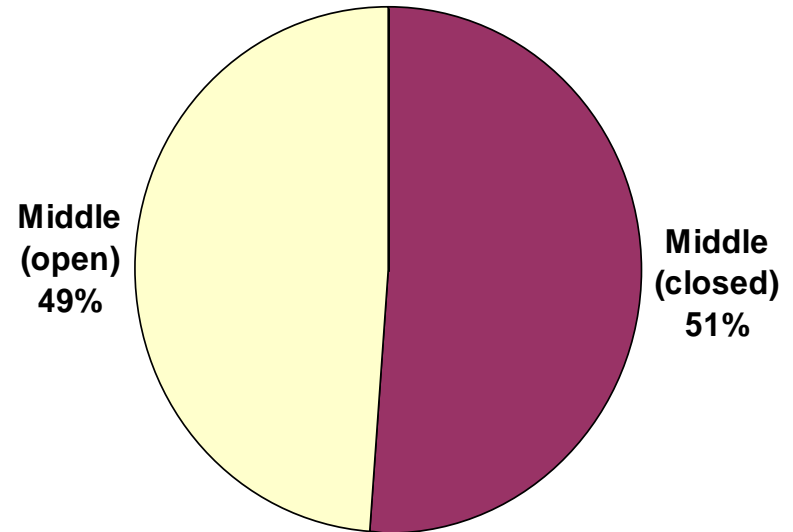
Photo by G.E. Gruell

Healthy Vegetation

FRCC Departure from historic stand structure



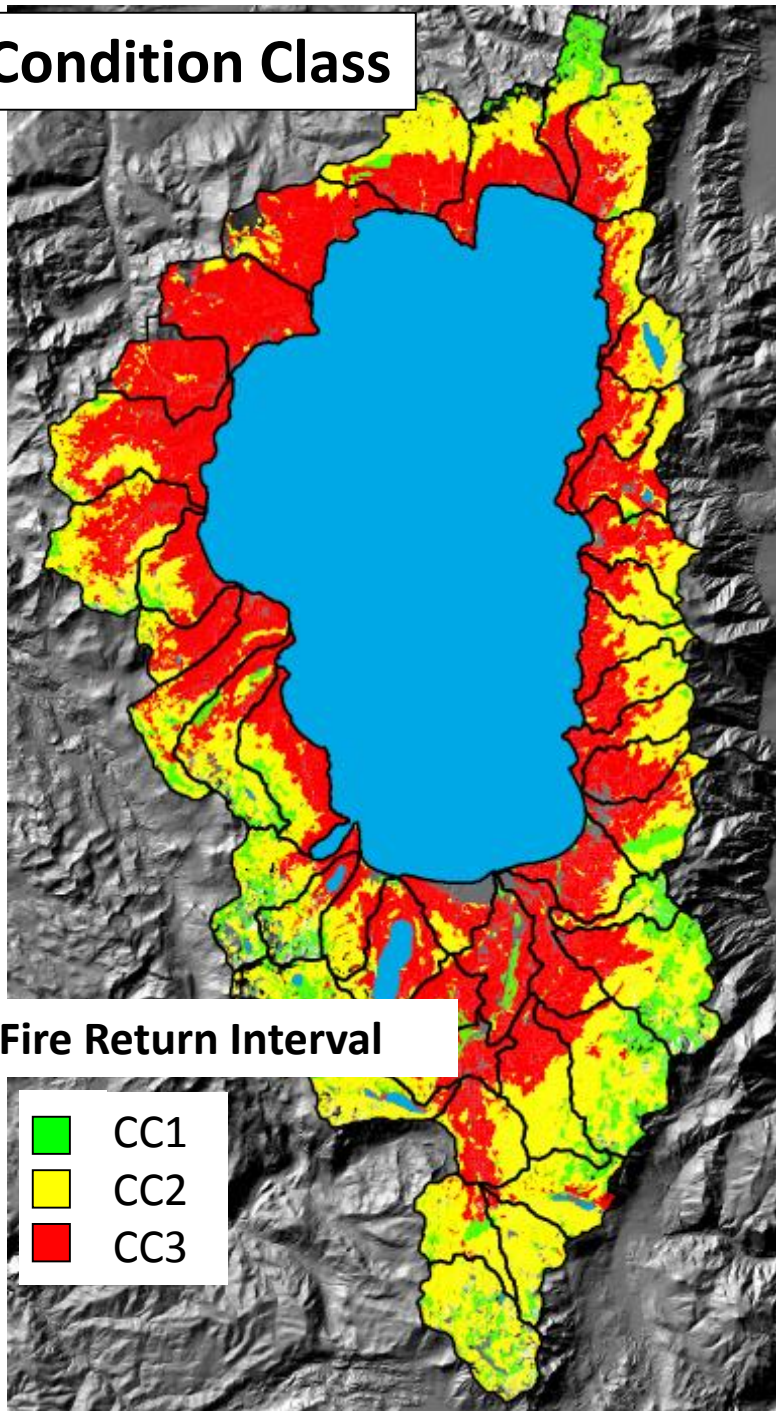
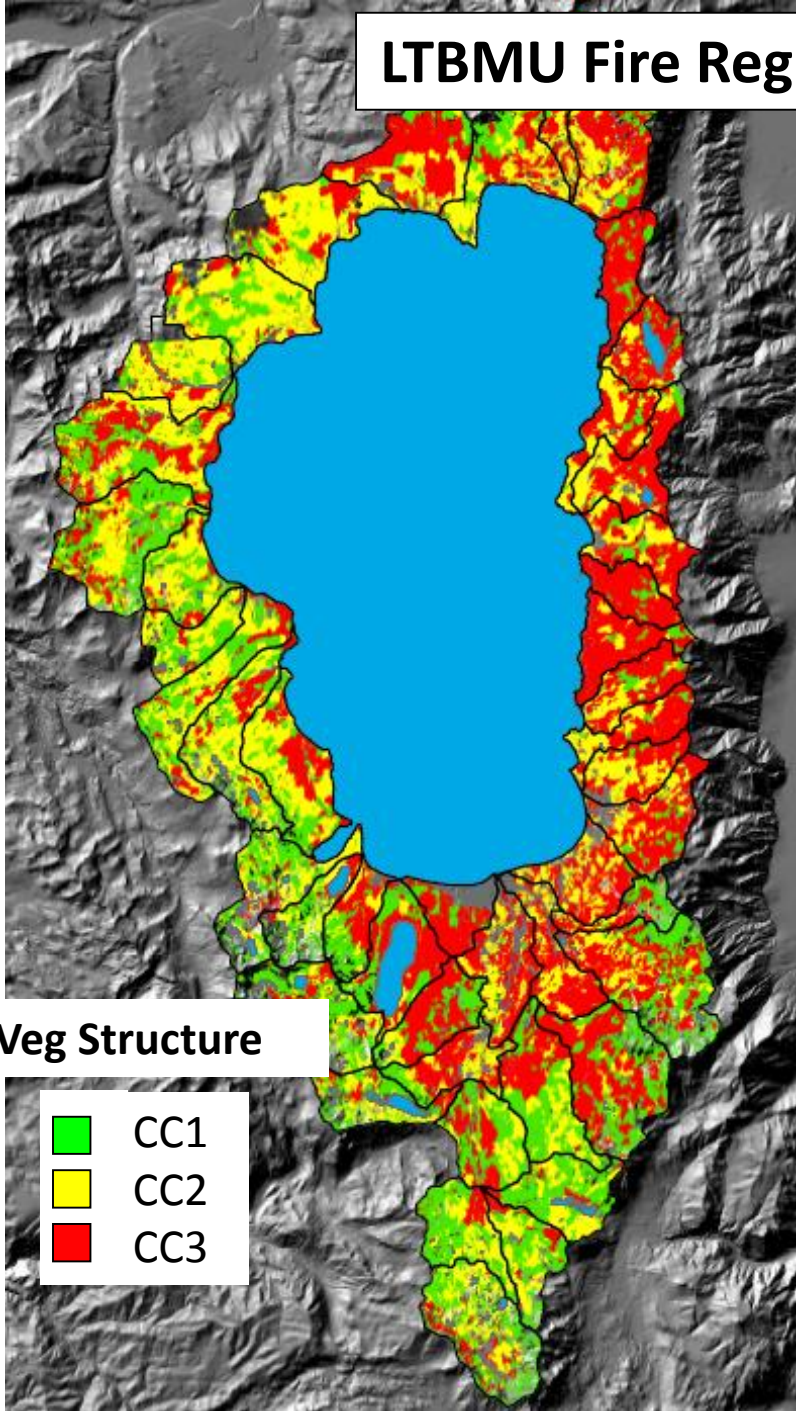
Historic Reference



Current Condition

Example from Slaughterhouse Canyon Watershed

LTBMU Fire Regime Condition Class



So we got what we got.

Now What?



Background to Aspen Restoration

Thank you Dave Burton!

- The Lake Tahoe Watershed Assessment (USDA 2000)
- Dave Burton & The **Aspen Delineation Project** raised the bar & awareness for Aspen (2002)
- GTR-178 Ecology, Biodiversity, Management & Restoration of Aspen in the Sierra Nevada (2006). W. Sheppard et al.
- The Aspen Mapping and Condition Assessment Project (2002-2007)
- Aspen Community Restoration Project (2009)



Policy on Aspen Program

Focus on Forest Health

- Lake Tahoe Restoration Act (2000)
- Sierra Nevada Forest Plan Amendment (2004)
- Southern Nevada Public Lands Management Act (amended 2007)
- LTBMU Forest Plan Revision (2015)
 - Vegetation treatments designed to restore aspen should focus on restoring dominance of aspen in the canopy, regenerating and expanding aspen stands, reducing the risk of loss of aspen stands from the landscape, and developing vigorous under-story deciduous tree, shrub, and herbaceous associations and habitats.
 - Consider aspen restoration or clone stimulation for each project planning area when aspen occur within vegetation management projects.

TRPA Vegetation Goals

- Provide a Diversity of Plant Communities
- **Provide for the Maintenance and Restoration of such Unique Ecosystems as Wetlands, Meadows, and other Riparian Vegetation**
- Conserve Threatened, Endangered and Sensitive Plant Species and Uncommon Plant Communities
- Provide for and Increase the Amount of Late Seral/Old Growth Stands
- The Appropriate Stocking Level and Distribution of Snags and Coarse Woody Debris Shall be Retained in the Regions Forests

USFS Goals

- **Healthy Diverse Forests**
- Preserve natural characteristics of uncommon plant communities
- Conserve or enhance threatened, endangered, proposed, and sensitive plants and their habitats
- Old forest emphasis areas resemble pre-settlement conditions
- Wildland Urban Interface
- Prevent noxious weeds
- Reduce pest related damage
- Spotted Owl & Northern Goshawk habitat protection
- **Riparian conservation areas**

Aspen Mapping and Condition Assessment Project (2002-2007)

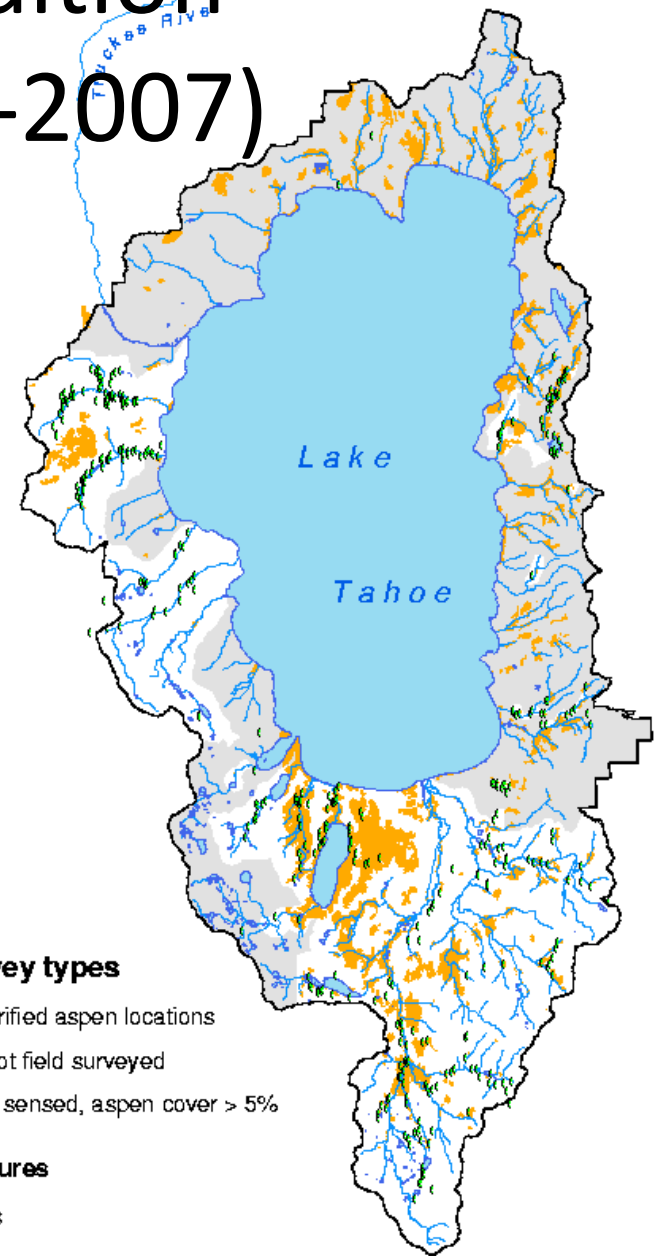
- The Aspen Mapping & Condition Assessment Project identified approximately 65% (1,600 out of 2,500 acres) of aspen stands were at moderate, high, or highest risk of loss.

Aspen survey types

- Field verified aspen locations
- Areas not field surveyed
- Remote sensed, aspen cover > 5%

Physical features

- Streams
- Lakes
- LTBMJ boundary



End of this portion of show.

Aspen Community Restoration Project Decision Memo: 2009



Aspen Community Restoration Project:

Objectives

- Aspen dominate the upper canopy for the next 15 years;
- Conifers comprise less than 25% of the canopy for the next 15 years;
- Aspen regeneration is vigorous (i.e., ≥ 500 stems/acre) within three years;
- Aspen stand expansion is initiated within three years;
- Aspen stands regenerate and mature toward a low or negligible risk of loss during the 15 years following treatment; and
- Aspen and associated deciduous tree, shrub, and herbaceous habitats are improved and benefit the biological diversity and ecological condition of the forest.

Secondary Benefits of Aspen Restoration

- Aspen stand resilience to wildfire will be improved and wildfire behavior within and adjacent to treated stands will be moderated through conifer removal.
 - Wildland fire burn severity and duration within treated aspen stands will be reduced;
 - Risks to heritage resources and visual resources from wildland fire will be reduced; and
 - Aspen stands in the desired condition will act as natural fire-breaks on the landscape.
- Aspen community health and vigor will be improved as sunlight and subsurface water become more readily available to aspen and associated understory plant communities (i.e., mountain pennyroyal and California corn lily).
 - Greater availability of subsurface water will improve the ability of aspen to repel insects and diseases, especially during periods of drought;
 - Resistance to conifer invasion will be improved in treated stands where reduced transpiration rates lead to increased subsurface water, as conifers generally prefer drier soils than aspen do; and
 - Infiltration and hydrologic function will improve in treated stands with healthy aspen understory plant communities.
- The composition, species richness, and function of forested areas and associated wildlife and plant communities will be improved.
- Visual resources will be improved as treated aspen stands regenerate and mature.

Aspen Community Restoration Project



Legend

Aspen Restoration Stands

Loss Potential

- HIGHEST
- HIGH
- MODERATE

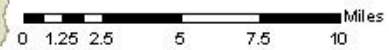
— Highways

■ Lakes

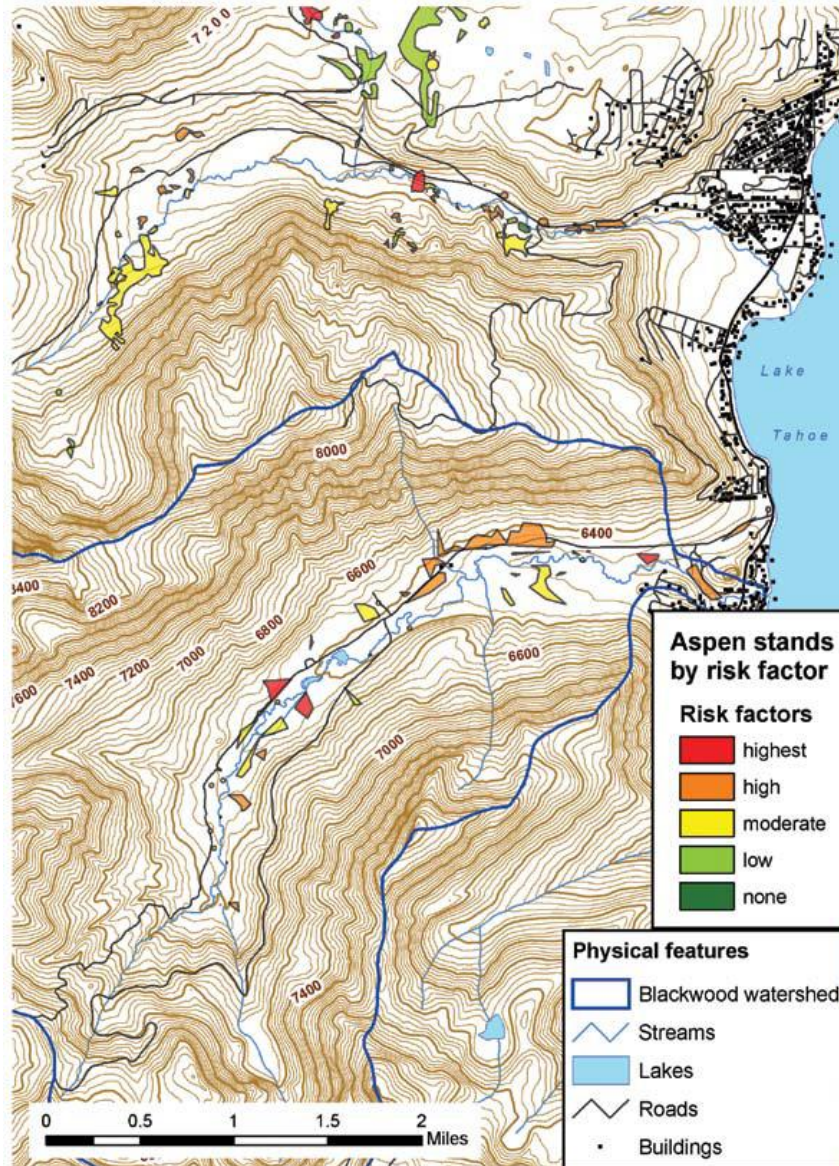
— Streams

Owner

■ USDA FOREST SERVICE

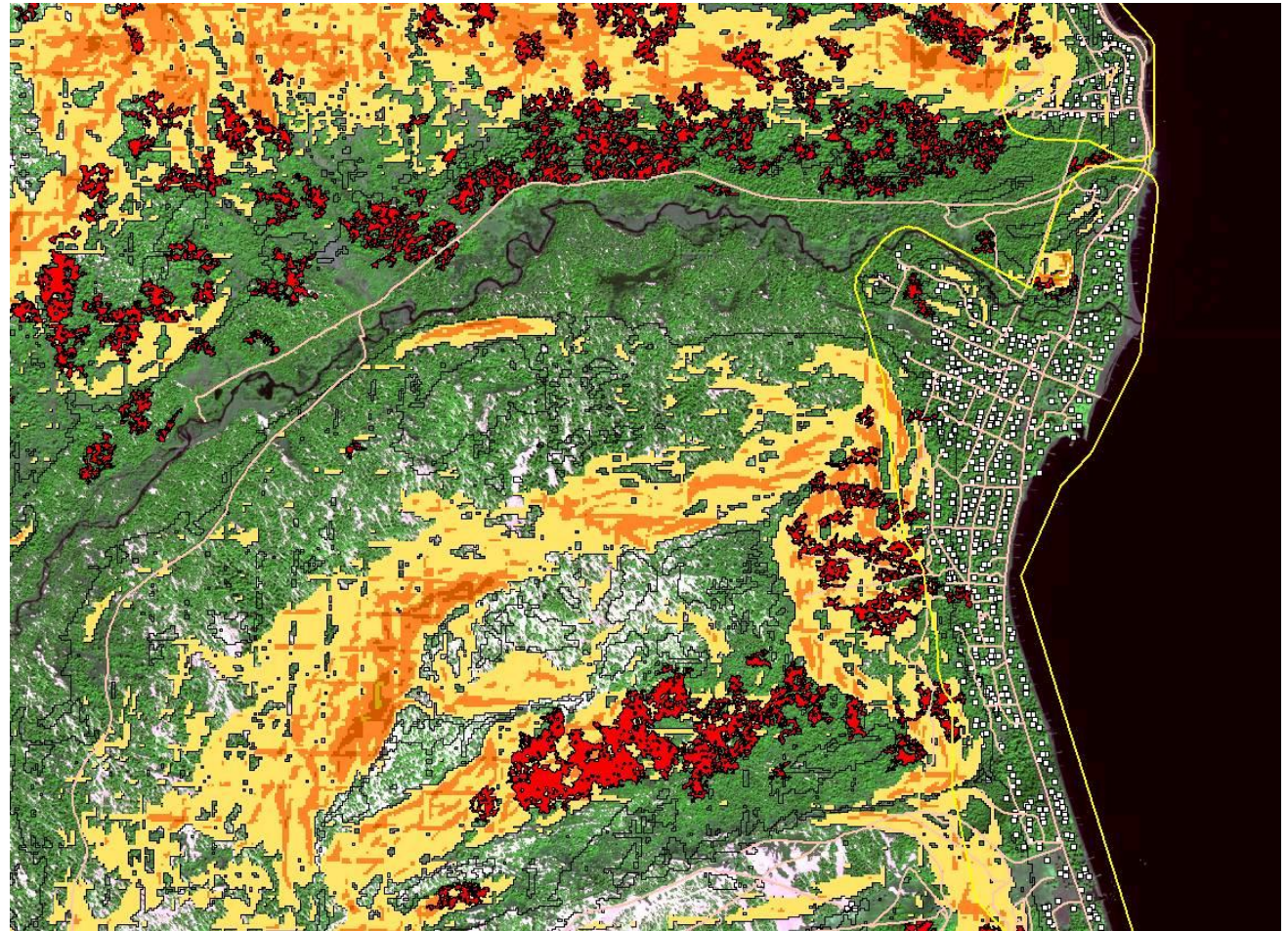


Aspen in Blackwood Canyon and Ward Creek (map developed by LTBMU from 2002 and 2003 data).



Blackwood: Forest Image Analysis

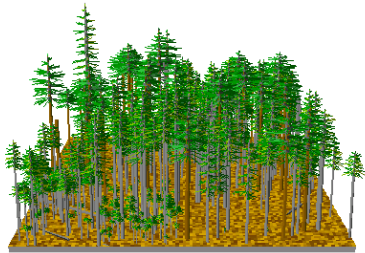
Red = Highest Density
= Conifer on Aspen



Simulated Wildfire: No Treatment

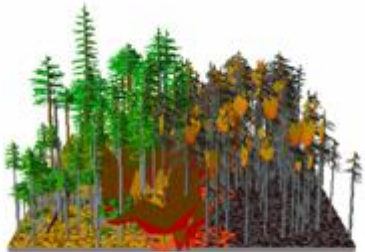
Stand=0010003 Year=2005 Beginning of cycle

Current Condition



Stand=0010003 Year=2005 Beginning of fire (01/03)

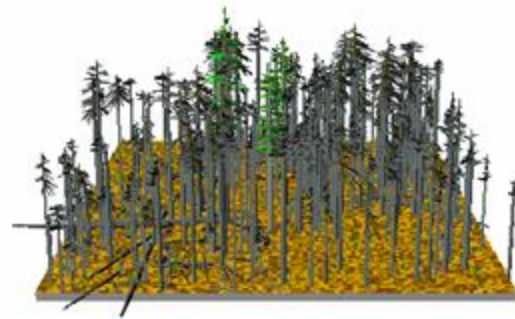
No Thin Condition



Blackwood Canyon

Stand=0010003 Year=2010 Beginning of cycle

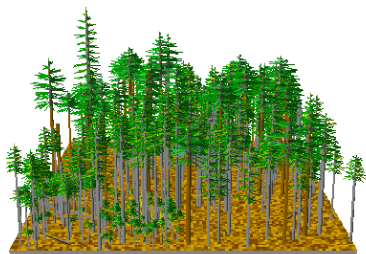
Post-Fire Condition



Simulated Wildfire: Thinned

Stand=0010003 Year=2005 Beginning of cycle

Current Condition



Stand=0010003 Year=2010 Beginning of cycle

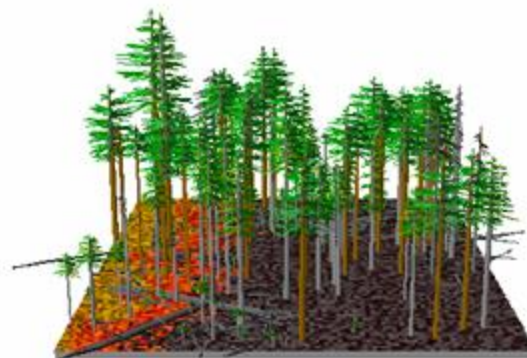
Thinned Condition



Blackwood Canyon

Stand=0010003 Year=2010 During the fire (02/03)

Post-Fire Condition



Treatment of Aspen Stands

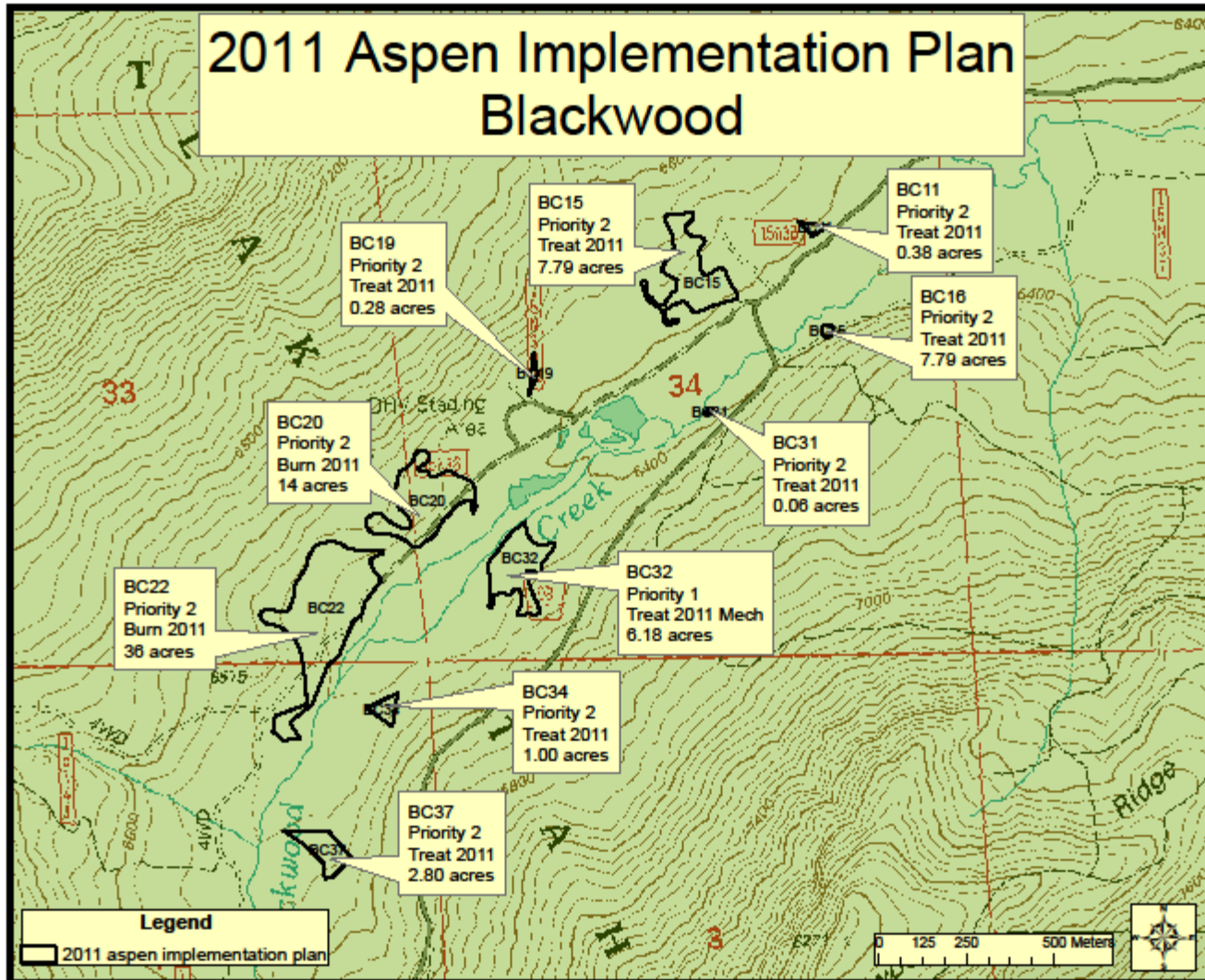


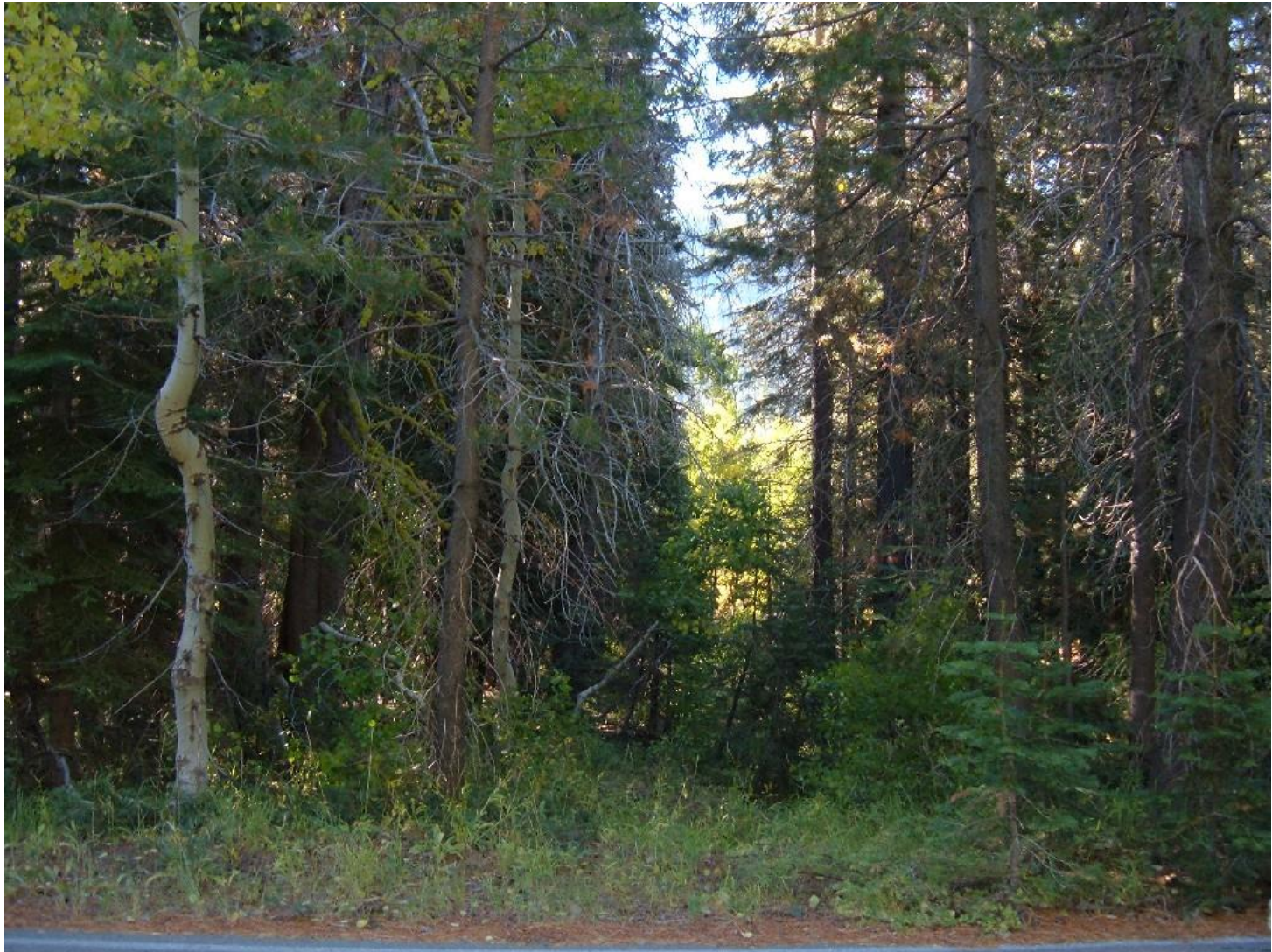


Figure 4.1-6: (File: Fig416_encroachment.JPG) This small aspen stand at the edge of a meadow in Blackwood Canyon is being actively invaded by white fir (*Abies concolor*). Ample light under mature aspen is encouraging some regeneration of aspen, but little regeneration is occurring under the heavily shaded fir portion of this stand.

Treatment Methods

- Hand Thin/Pile/Burn & Mechanical Thin
 - Thinning Understory/Fuel Ladder & Overstory
 - Reducing Surface Fuels
- Matching treatment to landscape features
 - Mechanical Equipment on Slopes <30%, LOPs, dry ground

An aspen stand at high risk of loss from the landscape
before treatment in Blackwood Canyon
(note white aspen tree bole on left side of the photo)



An aspen stand formerly at high risk of loss from the landscape shown immediately after hand thinning treatment in Blackwood Canyon
(note white aspen tree bole on left side of the photo)



An aspen stand at formerly high risk of loss from the landscape three years after treatment in Blackwood Canyon

(note white aspen tree bole on left side of the photo)



High Risk of Loss



Date: 6/10/13
Project: South Slope
Contract / # : P10001000
Waypoint: P10001000
Azimuth: 335 AU

06/10/2013 15:26

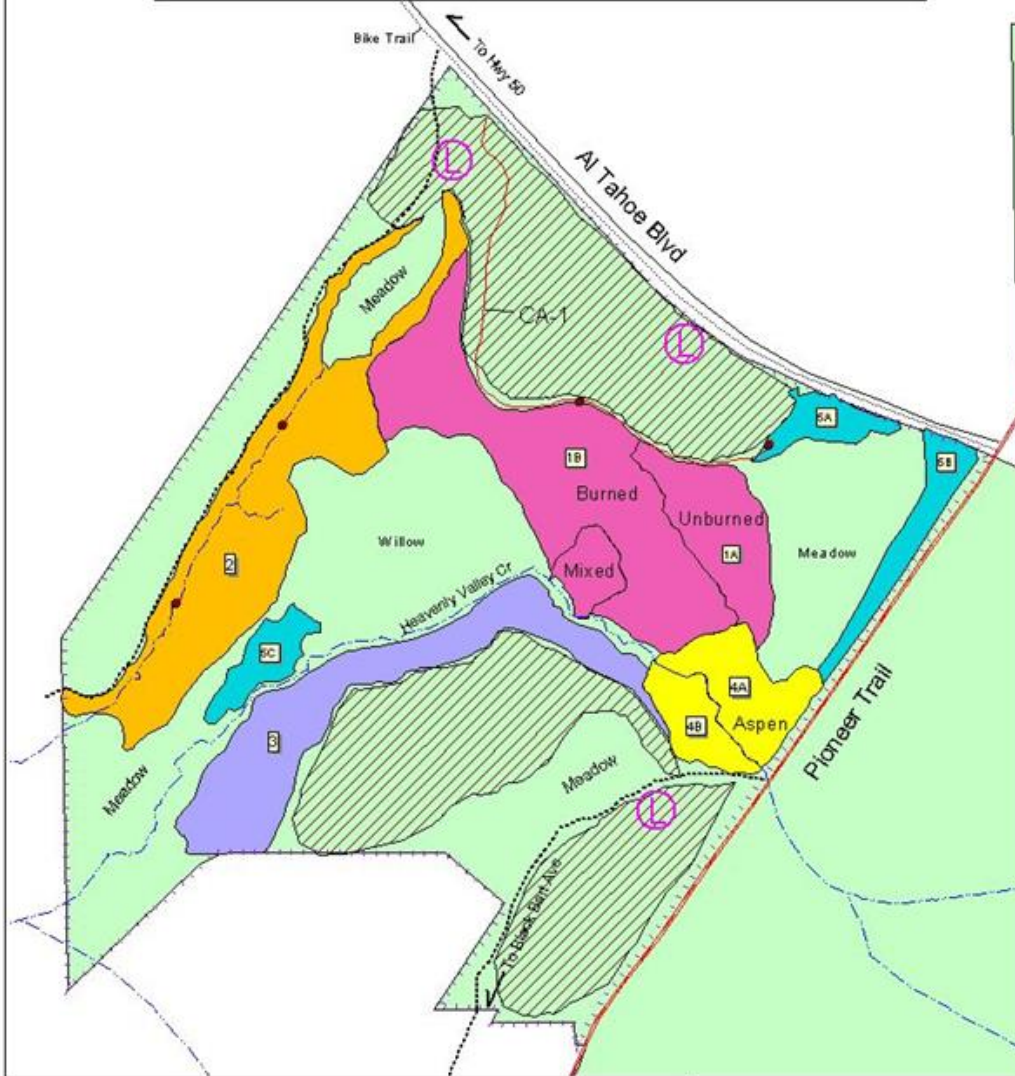
Following Mechanized Treatment



Heavenly Valley Creek: SEZ Project

- Dense lodgepole pine stand within this area of Heavenly Valley Creek
- Bark beetle related mortality occurred in the mid 1990s'
- Wildfire occurred in December 2002 from tree hitting a power line during windstorm
- Wildfire burned at high intensity within the stream zone

Heavenly Creek Stream Environment Zone Demonstration Project



- 0.04 0 0.08 0.1 Miles
- Unit 1A-1.8 Acres
 - Unit 1B-6.5 Acres
 - Unit 2-6.0 Acres
 - Unit 3-4.0 Acres
 - Unit 4A-1.5 Acres
 - Unit 4B-0.9 Acres
 - Unit 5A-0.6 Acres
 - Unit 5B-1.0 Acres
 - Unit 5C-0.7 Acres
 - Local Road
 - Access Road
 - Streamcourse
 - Controlled Area
 - Project Area
 - Proposed Crossing
 - Existing Landing
 - Treated
 - National Forest
 - Other

RRM-3/06

USDA Forest Service
Lake Tahoe Basin Management Unit

This map is a technical drawing and does not constitute a contract. It is subject to change without notice. The user assumes all responsibility for the accuracy and completeness of the information shown on this map. The user agrees to hold the Forest Service harmless for any and all claims, damages, or losses, including those caused by the use of this map, whether or not such claims, damages, or losses are caused in whole or in part by the negligence of the Forest Service.

For more information, contact: Lake Tahoe Basin Management Unit
20000 Lake Blvd, Box 100, Truckee, CA 96161
530.937.4300

Stream Environment Zone : Vegetation & Fuel



Buffer Zone



**Stream
Environment
Zone**



Pioneer Fire



High Density Encroachment
w/ Fuel Ladders

A photograph of a forest immediately after a treatment. The scene shows a mix of tall, thin pine trees in the background and a large, bushy yellow-green shrub in the middle ground. In the foreground, there is a large, dark tree trunk on the right side, and the ground is covered with dry grass and some debris. The text "Immediately Post-Treatment" is overlaid in the bottom left corner.

Immediately
Post-Treatment

A photograph of a forest landscape. In the foreground, there is a field of tall, green grass. To the right, a large, mature pine tree with a thick trunk and dense green needles stands prominently. In the center and left, there is a dense thicket of green shrubs and smaller trees. The background shows more trees under a bright sky. The text "Four Years Later" is overlaid in the lower-left area, and a timestamp "07/14/2011 14:58" is in the lower-right corner.

Four Years Later

07/14/2011 14:58

Mechanical Treatments



Whole Tree Harvesting



How is Work Accomplished?



Hand Thinning

Prescribed Fire: Pile Burning



That's one big aspen tree!



Influences on Treatment Decisions

Costs, Access, & Markets

- Limited Operating Periods
- Method of operation – Type & Set of Equipment
- Accessibility, Developments, Site Features (SEZ, Boulders)
- Product/Processing, Transportation
- Lack of markets for products, Mill Closures
- Low product values

Limited Operating Periods

Lake Tahoe Basin Management Unit - Seasonal Work Restrictions (LOP)

		Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec		
TRPA Grading Ord.	10/15-5/1	Red	Red	Red	Red	Red						Red	Red	Red	Red
Northern Goshawk	2/15-9/15			Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow					
Ca. Spotted Owl	3/1-8/31			Green	Green	Green	Green	Green	Green	Green					
Bald Eagle (Winter)	10/15-3/15	Red	Red	Red	Red							Red	Red	Red	Red
Bald Eagle (Nesting)	3/1-8/31			Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow					
Osprey	3/1-8/15			Green	Green	Green	Green	Green	Green	Green					
Great Grey Owl (PAC)	3/1-8/15			Red	Red	Red	Red	Red	Red	Red					
Willow Flycatcher	6/1-7/31						Yellow	Yellow	Yellow						
Waterfowl	3/1-6/30			Green	Green	Green	Green	Green							
Peregrine Falcon	4/1-7/30				Red	Red	Red	Red	Red	Red					
Martin (Den Sites)	3/1-7/31			Yellow	Yellow	Yellow	Yellow	Yellow	Yellow						
Fisher (Den Sites)	3/1-6/30			Green	Green	Green	Green	Green							

Accessibility

NFS Lands:

21,277 acres

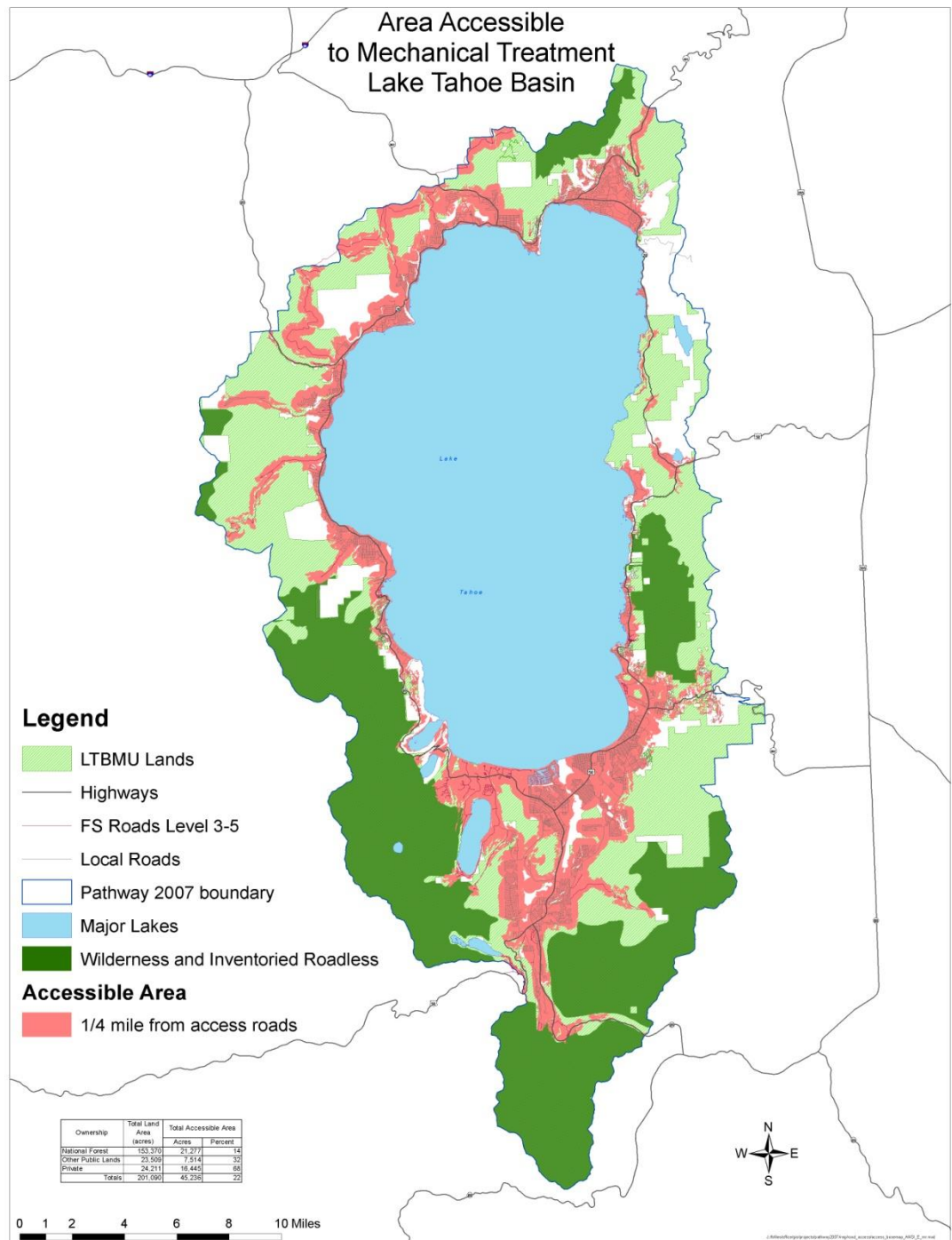
14%

All Lands:

45,236 acres

22%

- Due to other site factors, e.g., rockiness, practical access may be less.
- Most accessibility in Urban areas and within WUI



Measures to Implement the Program

- Utilize Omnibus CE, HFI and HFRA Authorities
- Strategize & plan landscape-scale projects
- Use more conventional types of ground-based mechanical equipment
- Use more cable systems & end-lining
- Look for opportunities to expand biomass utilization
- Continue “up front” collaboration & partnering

Measures to Implement the Program

- Take advantage of opportunities to work outside the normal operating season
- Continue to work with regulatory agencies to streamline processes
- Continue to adapt and learn from lessons, e.g., Heavenly SEZ Mechanical Demonstration project



Questions? More Info

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Lake Tahoe Basin
Management Unit

www.fs.usda.gov/ltbmu