

ECOSYSTEM RESTORATION AND RENEWABLE ENERGY PRODUCTION ON THE MODOC PLATEAU

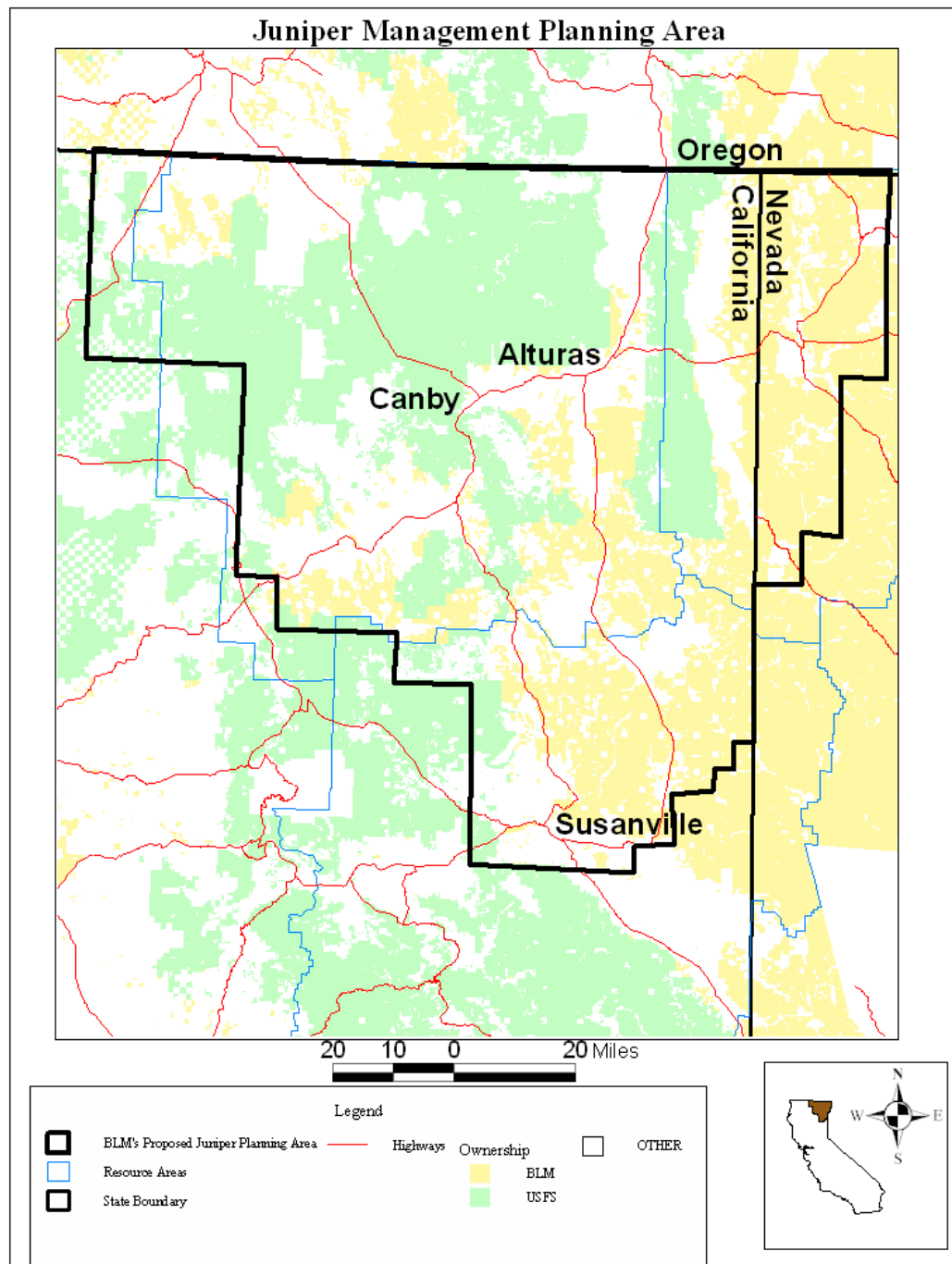
A Cooperative Effort Involving:

**Bureau of Land Management
United States Forest Service
North Cal-Neva RC&D
Modoc County
Lassen County
Siskiyou County
Sierra Nevada Conservancy**





The 6.6 million acre planning area includes land in 3 BLM Field Offices, 3 National Forests and 2 States





Alturas - 1874





1916

This is a typical example of the increase in western juniper encroachment over a 67 year period within the planning area.



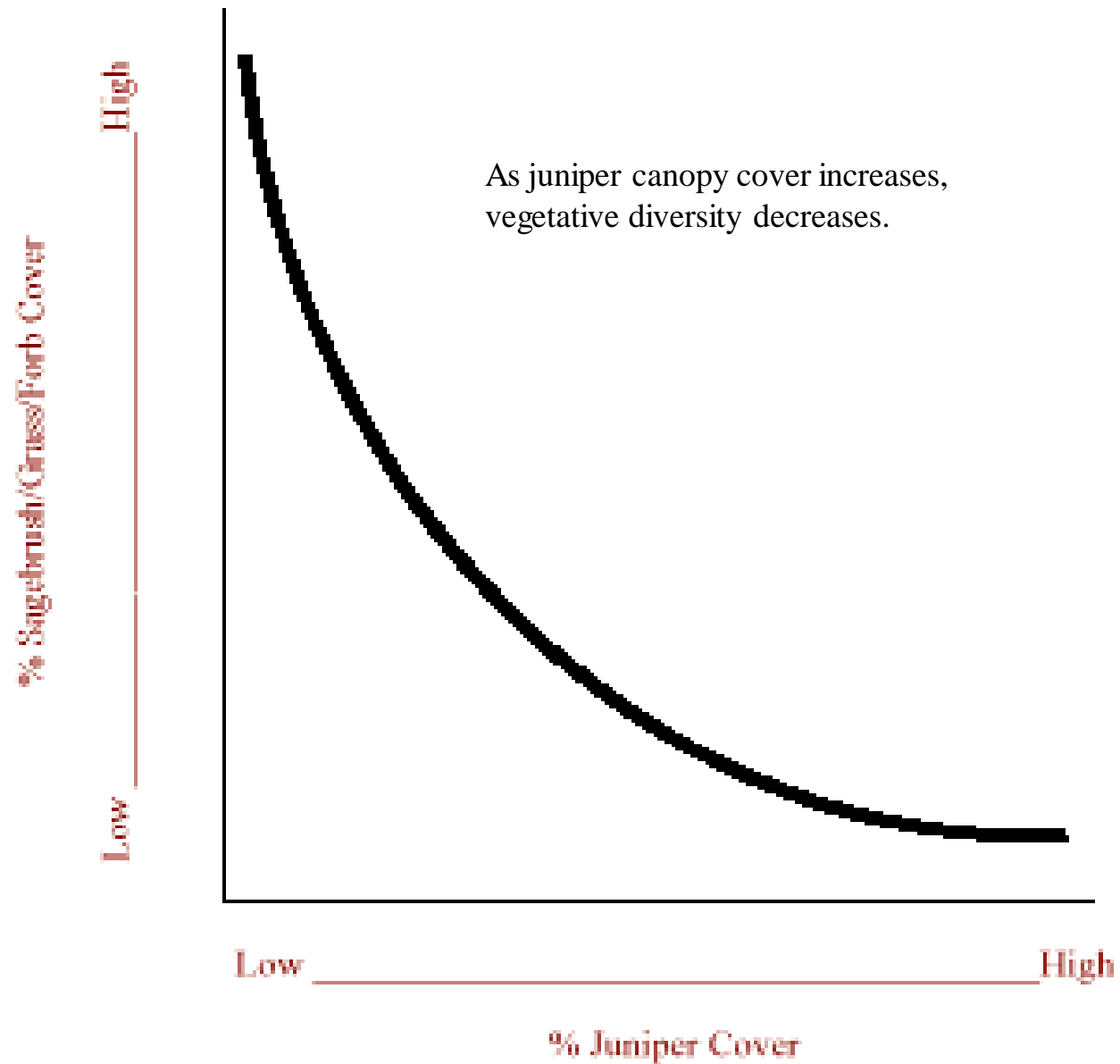
1983

Photos courtesy of
McGarva Ranch





07.09.2004



Adapted from Research by Rick Miller









**A feller-buncher at work shearing junipers within the planning area.
Note the extent of western juniper encroachment in the background.**

Regional Perceptions

Ecological restoration or shortsighted policy?

Decision to eradicate 1.2 million acres of junipers could backfire, critics say

By TOM KNUDSON
McCLATCHY NEWS SERVICE

ALTURAS — Moments after he saw the centuries-old junipers on the ground, Glenn Fair felt sick to his stomach.

A 60-year-old fishing guide from rural Lassen County, Fair has nothing against thinning forests to protect them from fire and disease. But the barbed, dusty swath of stumps and downed junipers logged from public land last year and the adjacent house-high pile of wood chips was not that kind of cut.

Not only were trees mowed down across nearly 300 acres, they were leveled under a banner of ecological restoration, energy independence and climate-friendly power. It was portrayed as a win-win by the federal government, which was



Near Bayley Reservoir in southern Modoc County, fishing guide Glenn Fair stands next to cut-down junipers in April.

Photos by GANDY PENCH / Sacramento Bee

"I find a similar situation in Yosemite where the park service continues to remove lodgepole pine seedlings from Tuolumne Meadows as fast as they colonize," she continued. "Every time the meadow is cleared (i.e., clear-cut) of the young pines, they re-seed rapidly. Junipers might bounce back for another reason, too.

"We are talking about trees that are regenerated by seeds dispersed by animals, by birds that eat the fruits and excrete the seeds and also by coyotes," said Lanner, author of "Conifers of California" and an authority on junipers.

"So as long as you have junipers around, you are going to have a source of seed. And unless you eradicate the animals, you are going to get junipers back again."

Jade-green, burlier than a sumo wrestler and 15 to 60 feet tall, western junipers thrive in the arid reaches of Nevada, eastern Oregon, northeast Califor-

nia and are often referred to as an invasive weed that is threatening natural communities.

Nonetheless, that is much the way federal officials see it. Bouncing down a gravel road in a government vehicle, Edith Asrow looked out at a stand of younger junipers and did not appreciate the verdant view.

"I see a sort of wasteland," said Asrow, an ecosystem staff officer for the Modoc National Forest. "As the junipers thicken, we lose all the grasses and flowering plants. So all you have left is one species. It's a juniper desert."

Up ahead was a stand of junipers that had been heavily cut for firewood, leaving a snarl of rust-colored branches, stumps and other woody debris.

"Seeing this to me is beautiful because we are on the path of balancing an ecosystem," Asrow said. "I look at this as my

kid in braces. In other words, this is a temporary state." Lanner scoffed at her assessment. "Junipers are part of our biodiversity, as much as sagebrush," he said.

Like all trees, they absorb carbon dioxide from the atmosphere and store it as carbon. Nationwide, forests sequester 200 to 280 million tons of carbon per year, offsetting up to 10 percent of greenhouse gas emissions.

"The wholesale removal of trees can only result in the loss of a lot of carbon sequestration capacity," Lanner said.

Federal officials disagree saying grass and sagebrush actually store more. "For us, trade off an intellectual conversation about carbon sequestration and leave juniper trees to make any sort of prudent decision to me," Asrow said.

PLAN AIMS TO RESTORE MODOC NATIONAL FOREST CLIMATE CHANGE; FOES SAY

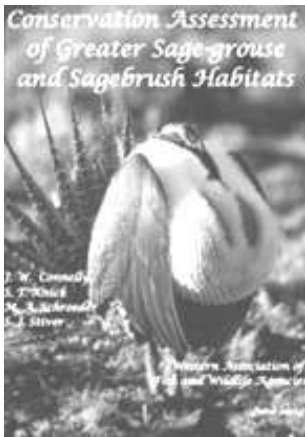
By TOM KNUDSON
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ALTURAS — Moments after he saw the centuries-old junipers on the ground,

high pile of wood chips was not that kind of cut. Not only were trees mowed down across nearly 300 acres, they were leveled



Scientific Research



THE ROLE OF FIRE IN JUNIPER AND PINYON WOODLANDS: A DESCRIPTIVE ANALYSIS

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ABSTRACT

Among the most pronounced vegetation changes in the past 150 years has been the increase in both distribution and density of juniper (*Juniperus* spp.) and pinyon (*Pinus* spp.) in the Intermountain West. Juniper and pinyon expansion between the Canadian and Mexican borders occupy more than 10 million ha throughout the region. Five of the juniper and pinyon woodlands were previously confined to rocky ridges or outcrops where sparse vegetation limited fire. Woodlands now occupy more productive sites with deeper well-drained soils. Woodland species occupy their expanded and shifting range of habitats during the last 150 years. Expansion of juniper and pinyon woodlands has been accompanied by a loss of native shrub-steppe species, and some (*Pinus* spp.) communities by pinyon and juniper species in largely adjacent to the reduced occurrence of fire. An important question is how fire has been replaced by more woodland expansion in western fire-dependent (juniper and pinyon) woodlands. These communities have been expanded to a large portion of the cover area in 12.5 years. At present, the major impediment to this cover type has been increased fire risk, more pine dominance, and effects and herbaceous vegetation decline. Fuel structure changes, which contribute to significant increases in the length of time the system takes to return to its original state, are the most significant impediment to the return of the system to its original state. The role of fire in the expansion of juniper and pinyon woodlands is discussed in the context of the system's response to fire. The intensity of these fires can lead to dominance by shrubs, further during the succession dynamics of the site. During the past, juniper and pinyon woodlands have been expanded to rocky ridges and outcrops, where fire risk and environmental conditions, and different patterns of the successional values of these environments have recently declined. Studies of woodlands, including the use of prescribed fire, during the past 150 years of development show woodlands contain indicators of native shrubs and herbs. They are successfully being used by various methods, particularly fire. However, since communities become too dominated by juniper, recovery becomes difficult and expensive.

Keywords: fire history, Intermountain West, juniper, *Juniperus occidentalis*, *Juniperus communis*, pinyon pine, *Pinus edulis*, *Pinus monophylla*, succession, Utah juniper, western juniper.

INTRODUCTION

Among the most pronounced vegetation changes during the past 150 years in the Intermountain West has been the increase in juniper and pinyon woodlands. Post-settlement expansion of these woodlands is considered representative when compared to prehistoric expansion during the Holocene (Miller and West 1991). At present, juniper and pinyon species occupy >30 million ha in the American West between the borders of Canada and Mexico (West 1999). Prior to settlement, these woodlands are estimated to have occupied ~2 million ha (Gibson et al. 1996, Miller et al. 1999). Woodland expansion began during the last 1800s throughout most of the region (Cannon and Stewart 1980, Burkhardt and Tisdale 1978, Tausch et al. 1981, Miller and Rose 1995, 1999). Causes of woodland expansion are frequently attributed to the reduced role of fire, introduction of domestic livestock grazing, shifts in climate, and increases in atmospheric CO₂ (Miller and Rose 1995).

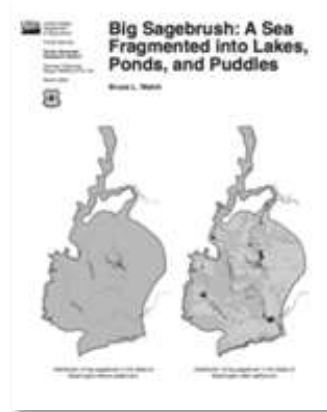
Although pinyon and juniper woodlands are estimated to have increased 10-fold during the past 150 years, they currently occupy far less land than they are capable of under current climatic conditions (West and Van Pelt 1996, Burkhardt 1987, Miller et al. 2000). In addition, many of these woodlands are in a transitional state where tree densities and cover are continuing to increase, causing declines in understory biomass (Cannon and Stewart 1980, Burkhardt and Tisdale 1978, Tausch et al. 1981, Miller and Rose 1995, 1999). Causes of woodland expansion are frequently attributed to the reduced role of fire, introduction of domestic livestock grazing, shifts in climate, and increases in atmospheric CO₂ (Miller and Rose 1995).

Although disturbance regimes and climate change have resulted in major changes in plant community composition. Since the 1950s, many backcountry



Out of Ashes, An Opportunity

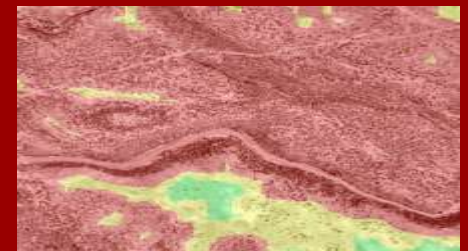
Journal of Land Management
National Office of Fire and Aviation
November 2000





*SAGESTEPPE ECOSYSTEM
RESTORATION STRATEGY
FINAL
ENVIRONMENTAL
IMPACT
STATEMENT*

Modoc National Forest
Alturas Field Office BLM
Modoc County
April 2008
R5-MB-161



Strategy Decisions

- Treat 14,000 – 21,000 public land acres per year in first two decades.
- Treat Up to 34,000 public land acres annually in subsequent decades.
- 56% fire and 41% mechanical treatments.
- Site Specific NEPA
- Implement design standards.
- Annual public meetings and reports.



Design Standards

- Cultural resources
- Firewood gathering
- Livestock grazing management practices
- Noxious weeds
- Old growth
- Road management
- Monitoring and adjustment approach

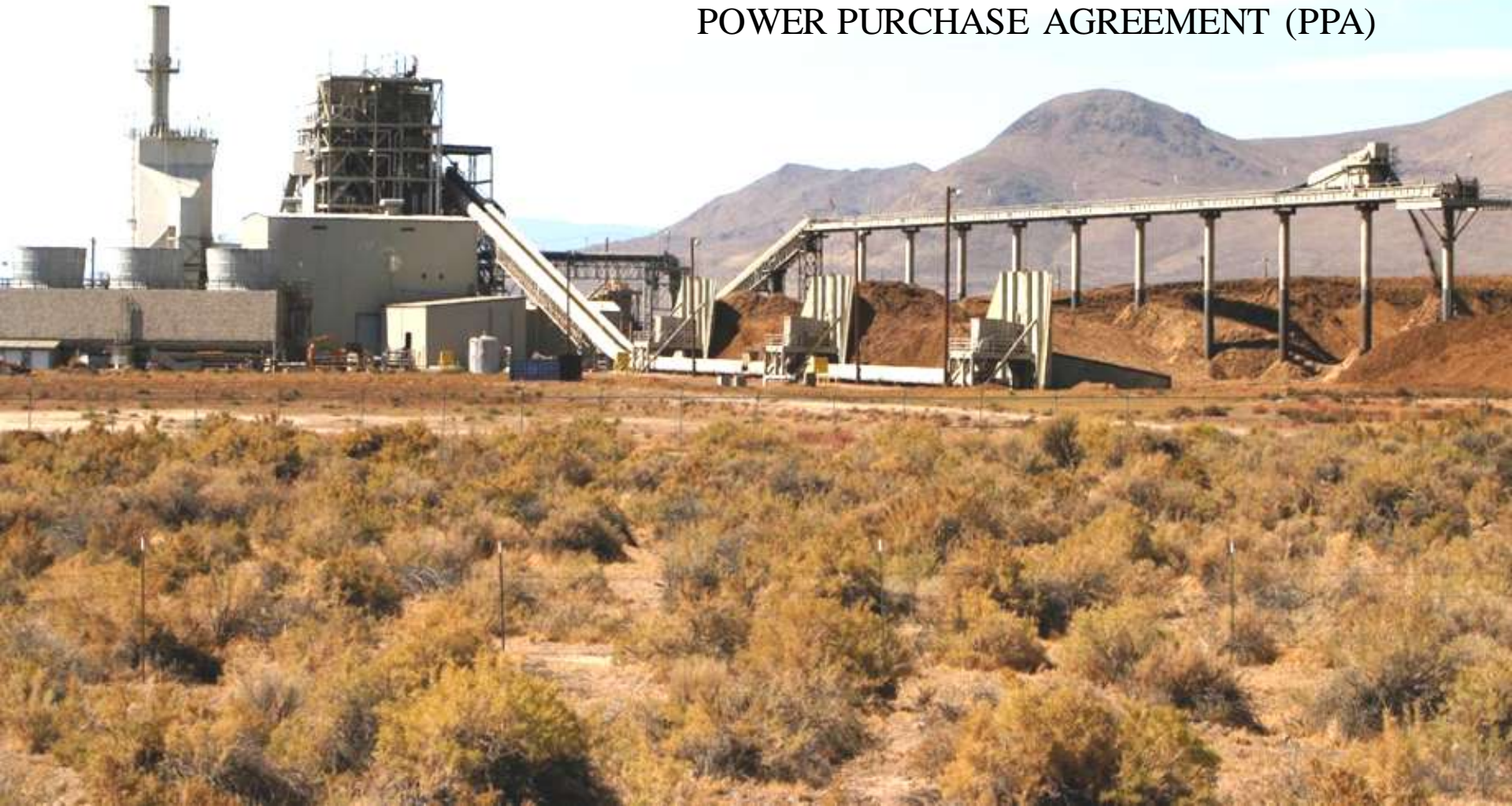




HONEY LAKE POWER

RENEWABLE PORTFOLIO STANDARD (RPS)

POWER PURCHASE AGREEMENT (PPA)



8,000 Bone Dry Tons (BDT) of Juniper per Megawatt – Year of Electricity

10 BDTs of Juniper per Acre

6,000 Acres Mechanically Treated per Year

60,000 BDTs of Juniper Available per Year

7.5 Megawatt-Years of Electricity



07.14.2004

Juniper doodles ready for skidding and chipping



Split Contracts



Utilizing a portable chipper and forwarder minimizes site disturbance as the need for skidding trees is eliminated.









