USDA United States Department of Agriculture

Forest Service

Pacific Southwest Region

Goosenest Adaptive Management Area

Klamath National Forest
Goosenest Ranger District

November 1999

Guide

Executive Summary

The Goosenest Adaptive Management Area (AMA) Guide provides a road map to coordinate activities and transform what we learn into actions. This Guide builds upon results from the previous "Goosenest AMA Ecosystem Analysis." The Ecosystem Analysis describes the biophysical and social resource information for land designated as the AMA and surrounding communities. The Ecosystem Analysis and information from local citizens provided the foundation on which this Guide based.

This road map includes

1) A guide to help citizens, communities, and groups get involved in their area of interest. Managers seek local knowledge and incorporate into natural resource management. The intent is to repeat past successes and create future successes with the addition of science and technology.

2) A guide for decisionmakers that outlines the Goosenest AMA strategies so time and funding decisions can support these actions. It provides key information on ways to encourage learning and seek changes in Federal agency natural resource practices and processes.

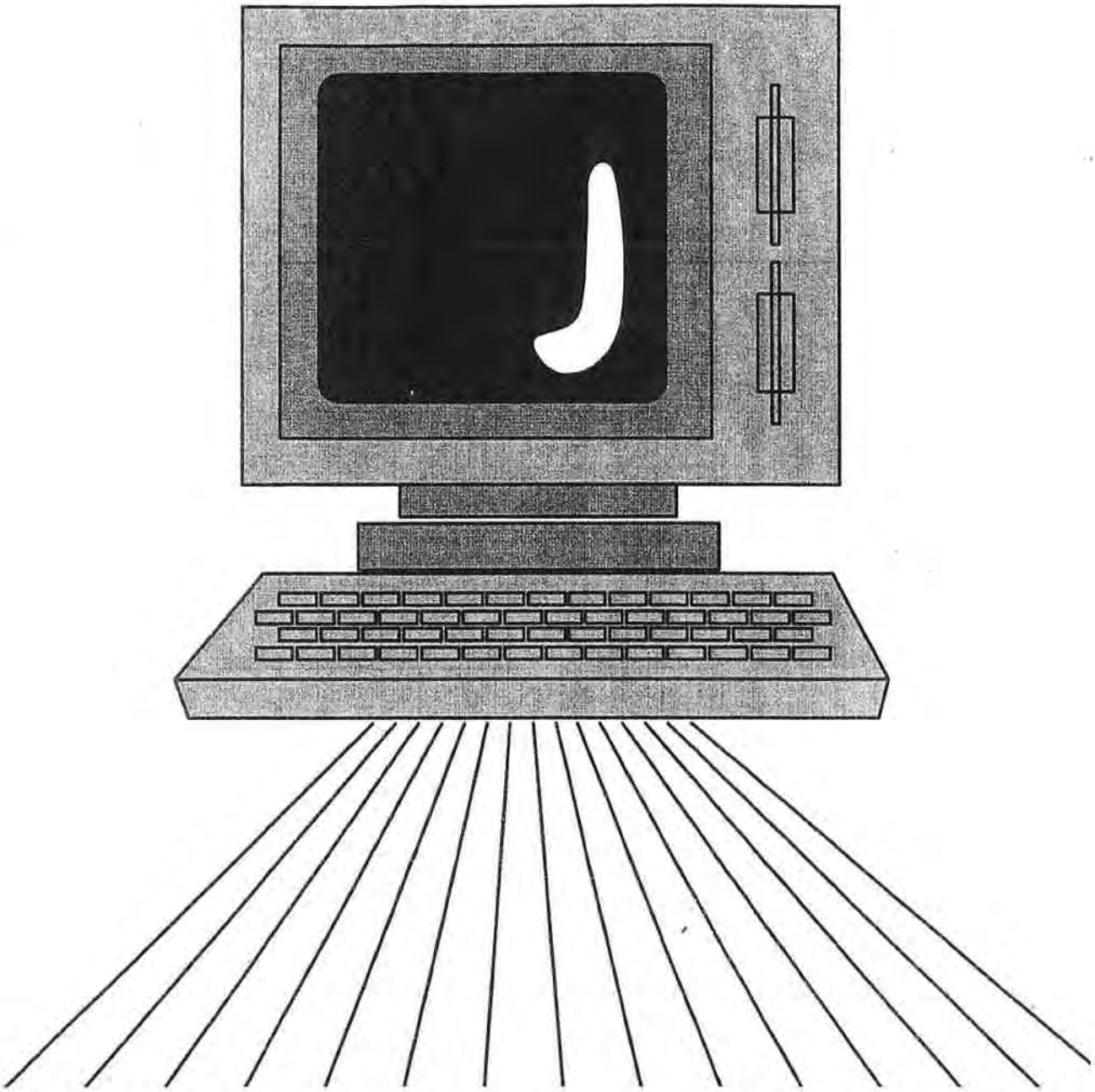
3) An adaptive management framework for natural resource managers, researchers, and others who wish to promote needed research, demonstration projects, and management studies to help communities and forests to remain viable and productive.

Potential Customers

Many potential customers exist for adaptive management outcomes. Listed below are some of the customers and partners that may find value in this Guide. The success of the Goosenest AMA depends in customers and partners sharing information and providing resources to further AMA goals.

- Local Citizens
- Agency natural resource managers
- Natural resource policymakers, elected officials and tribal governments
- Private enterprises that use public lands to provide goods and services and outdoor experiences
- Scientists and researchers
- Natural resource educators and professional groups
- General public
- Citizens from other parts of the U.S. and other countries concerned with natural resource management
- Other AMAs

GOOSENEST Adaptive Management Area



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www.r5.fs.fed.us/klamath/mgmt/gnama/index.html

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Goosenest Adaptive Management Area

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Bureau of Indian Affairs
California Department of Forestry and Fire Protection
The Klamath Tribes
Pacific Southwest Forest and Range Experiment Station
California Department of Fish and Game
U.S. Fish and Wildlife Service

Vicinity Map

Introduction

Adaptive Management is an ***approach*** to management which applies a continuing process of project planning, implementation, monitoring, and adjusting, based on what is learned. While adaptive management applies to all Federally managed lands under the Northwest Forest Plan (NWFP), AMAs are ***places*** specifically designated for this purpose.

A product of President's Clinton's Forest Conference and the NWFP, AMAs are Federal lands where the testing of new forest management techniques is encouraged, and where communicating and coordinating with local communities and interested groups is emphasized. The NWFP requires each AMA to complete a plan. This guide attempts to set a course of action for the Goosenest AMA, with a shared vision of the desired conditions for adjacent communities and Federal forest lands.

The intent of this document is for it to be dynamic; there is a lot of uncertainty surrounding forest management and its effect on ecosystems and adjacent communities. The initial direction set by this guide is an "approximation" of what needs to be undertaken. Updates and corrections will be done periodically, as knowledge is gained, conditions or values change, and as different participants become involved. The landscape-level strategies for this guide, for example, will likely change as new information and additional analysis and evaluations are conducted.

Why are we doing this guide if we've completed the *Goosenest Adaptive Management Area (AMA) Ecosystem Analysis*, you might ask? This AMA Guide is consistent with the magnitude of the proposed activities at this point in time. The detail found in this guide should be sufficient to support discussions on proposed projects.

What is the Ecosystem to Manage?

An ecosystem is a system formed by the interaction of a community of organisms with their environment, including humans. It may be as small as a mushroom colony on the forest floor or as large as the entire continent. Like a pebble tossed into a pond, a change in any component causes a ripple effect to spread across the landscape. A population increase in a small component, such as the western pine beetle, can have a large effect on a major component, such as the ponderosa pine community, by creating large areas of mortality.

The AMA ecosystem is defined by physical boundaries that are established by managers for the purpose of forest management. Understanding the biology and history of this ecosystem helps us to understand how our management will influence it and what it can provide on a sustainable basis.

Goosenest AMA Overview

The Goosenest AMA lies within the Cascade Mountains Physiographic Province in the eastern portion of the Klamath National Forest on the Goosenest Ranger District, eastern Siskiyou County in Northern California. Within in 351,000 acres of the District, the AMA comprises of 151,100 acres of Federal and 42,100 acres of private land for a total of 193,200 acres (see Figure 1- Vicinity Map, page 5).

Topography and Climate

The landscape consists of rolling volcanic topography with small mountains on the north flanks of Mt. Shasta. The landscape is fairly typical of the area, such as the Modoc Plateau and associated volcanic lands. Landscape features include intermittent streams with few perennial streams. The east one-third of the AMA is lacking intermittent streams that flow once a decade. Antelope and Butte Creeks flow north from their headwaters into Antelope Sink and a terminal basin in Butte Valley, respectively.

Elevation ranges from 4,200 in the valley floor to 8,500 feet on Whaleback Mountain. The topography is largely gentle but is broken by lava cones, pumice basins, and rugged lava flows between pine covered flats.

Climate is typical to the eastern Cascade Province mountains of southern Oregon and northern California. Precipitation amounts range from 10 to 40 inches, usually occurring during winter snows and summer rain storms. The summers are usually hot and dry, except for thunderstorms which can cause minor erosion and wildfires. Due to climatic changes, white fir has been reproducing and has become prevalent through much of the "pine" area.

Forest stands vary in composition due to changes in precipitation, temperature, aspect, and soil type. As precipitation increases at slightly higher elevations, the eastside ponderosa pine community dominates the landscape. The terrain is relatively flat with loamy sandy soils and an understory primarily of bitterbrush and Idaho fescue. The shallow soils of volcanic rock outcrops, however, are typically dominated by mountain mahogany.

Historical Uses

Lands within the AMA have been utilized by people for at least the last 7,000 years, and perhaps as long as 10,000 years or more. Ethnographic accounts show both the Shasta and Modoc Tribes as claimants for this land, probably serving mainly as summer resource procurement areas. Today few tribal members live near the AMA, but the area is utilized by American Indians and cherished as ancestral lands.

Other historic uses of the AMA include transportation routes since 1852, stock grazing/herding since about 1858, railroad logging from 1905 to 1955, and wide-spread dispersed-area recreation camping since 1946, mostly for deer hunting.

Since the turn of the last century, logging has been the single greatest influence on the landscape as well as having a significant role in shaping the region. The Weed Lumber Company started logging in the area in 1896, and by July of 1904 had reached the AMA. Weed Lumber Company became Long-Bell Lumber in 1926 and continued logging the AMA lands until 1957. Thus, there is virtually no old-growth eastside pine remaining within the AMA lands. Long-Bell Lumber lands eventually came under federal management through acquisitions and donations.

AMA Vegetation Communities

Much of the AMA's lower elevations were historically occupied by the eastside pine complex. This vegetation complex was dominated by ponderosa pine and maintained by frequent low to moderate intensity fires. At lower elevations and on drier sites, were an open pine stands with bunchgrasses and shade-intolerant shrubs such as bitterbrush and sagebrush in the understory. With increasing elevation and moisture, the stands became denser and allowed for inclusions of other conifer species. This complex included what is now characterized by ponderosa pine/bitterbrush/mountain-mahogany, juniper-shrub/pine, big sagebrush/ pine, and white fir/pine plant communities and encompasses approximately 90,000 acres of the AMA. These plant communities are described in more detail in the *Goosenest AMA Ecosystem Analysis* (pages 3-9 to 3-15; and 3-18 to 3-20).

Presently, changes in the landscape are characterized by these existing plant communities. Much of the ponderosa pine in the AMA is natural regeneration following the railroad logging (which occurred 50 to 90 years ago) and exists in early through mid-seral stages. Many of these stands have stocking densities exceeding the recommended level that will maintain low infestations of western pine and mountain pine bark beetles. Average annual precipitation in this complex ranges from 12-15 inches, mostly as snow, with infrequent and unpredictable summer showers. Typical of these eastside and cold desert ecosystems, much of the snow may sublimate (evaporate), making effective moisture less than that indicated by annual precipitation.

Bird Species in the AMA

Neotropical migrants associated with open pine stands are the American robin, ash-throated flycatcher, chipping sparrow, northern flicker, western bluebird, western tanager, gray flycatchers, and western woodpewee. In denser stands of ponderosa pine, neotropical migrants include Audubon's warbler, dusky flycatcher, and hermit thrush. Gray flycatchers displace dusky flycatchers in the more open stands. Gray flycatchers appear to be absent in areas with white fir encroachment and may be ecological indicator species useful in determining stand health and other biological components of ecosystems. The costs of monitoring landbirds, which respond quickly to habitat changes, is relatively low compared to costs for assessing other biological components. Landbird species composition and population demographics can be used to track management actions or results toward the desired conditions. For more information see *Goosenest AMA Ecosystem Analysis* Appendix G.

Northern goshawks utilize many stands within the eastside pine communities. Goshawks nest in mature pine stands, 14-40 acres in size, with canopy closure greater than 50%. Many of their prey species are known to occur in this plant community, including pileated and white-headed woodpeckers and many small mammals. Several goshawk nesting territories are located throughout several of the AMA plant communities. Foraging habitat is limited in many areas, due to increased understory density of white fir and lodgepole. Northern goshawk fledgling success appears to be interdependent on stand density, available forage, and preybase. Thus the northern goshawk may be a better indictor species for the Goosenest AMA's ecological functionality and health than the northern spotted owl. Historically open pine stands existed, not the dense stands today which include white fir and lodgepole encroachment. In some locations within the AMA, northern spotted owl fledging success is nonexistent for undetermined reasons.

Further information can be found in the *Goosenest AMA Ecosystem Analysis.*

What is Adaptive Management?

The basic rational for adaptive management in the context of ecosystem management is that we don't know everything there is to know about how to manage natural resources. The complexity, changeability, and particularly the unpredictability of the world around us mean that there is always room to learn (Stankey & Shindler 1996).

This guide is divided into three Elements or Chapters:

The ***First Element*** provides the beginning of the road map with the:
- Visions of the Goosenest AMA

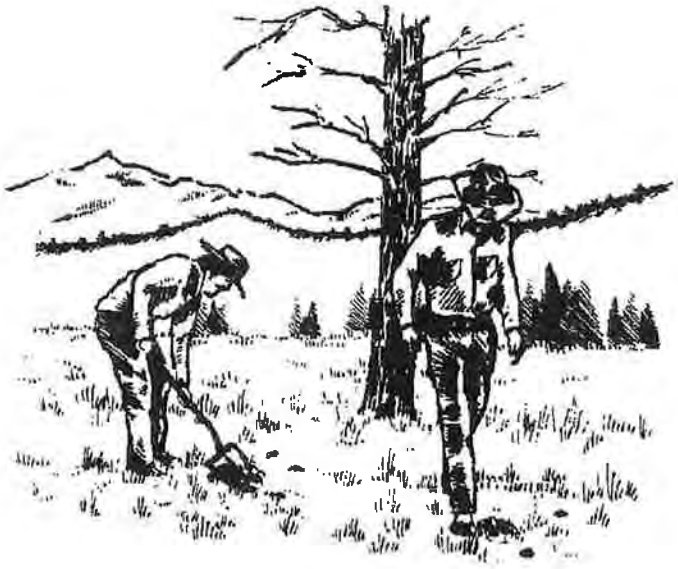
The ***Second Element*** describes learning:
- Learning Opportunities,
- A Guide to Implementation, Restoration, Monitoring, and Experimental Activities, and
- Landscape Management Design which has a multi-year schedule of proposed projects.

The ***Third Element*** provides an overview of the social/human dimension:
- Involved Communities,
- Community Strategy,
- Integration,
- Education, and
- Coordination of Activities.

"Failure is success if we learn from it."

Malcolm S. Forbes

The Appendices contain a Funding Strategy, Monitoring for the AMA Guide, and a Socio-economic Strategy. The final portion of the document is the Map Section.



Element I -- Current Vision Of The Goosenest AMA

The Current Vision of the Goosenest AMA was developed from an extensive public involvement process. Starting in 1994, this process continued during the Ecosystem Analysis and is finalized here in the AMA Guide.

☆ The Current Vision identifies desired conditions developed in collaboration with communities during the Goosenest AMA Ecosystem Analysis. The Ecosystem Analysis details the desired conditions relating to water, terrestrial and human dimension resources. The Ecosystem Analysis considered all resource needs in identifying Management Opportunities. These Management Opportunities include traditional and non-traditional ways to utilize prescribed burning, silvicultural techniques to manage eastside ecosystems and riparian habitat. The Ecosystem Analysis also describes what the AMA will look like fifty years from now, how it will function, and what major restoration is needed.

☆ Collaboration is an important part of the current vision. Collaboration provides opportunities to work together in new ways. In the AMA, collaboration is achieved by small informal groups or communities. Collaboration will be used to develop a constructive process, for resolving conflicts which, in turn, leads to an agreement to move forward even if everyone doesn't totally agree. The North Star is analogous to the shared vision; we do not expect to reach the North Star, but we can use it as a compass to steer by.

☆ Resources are managed in an economically productive and ecologically sound manner to provide multiple use. Some results of management activities can contribute to local and regional economic diversity, as outlined in Community Action Plans (CAPs).

☆ Desired Conditions are achieved through implementation of research, experimentation, innovative and creative practices. Learning is on-going. Monitoring is used to determine the degrees of success and for the improvement of future management actions. Results are shared so others can benefit from our experiences.

☆ Adaptive management improves our ability to manage resources and develops better relationships with interested publics and other agencies.

☆ Through adaptive management, lessons are learned, relationships are built, information is shared and the AMA is hopefully a better place.

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Area

Element I -- Shared Vision for the next fifty years.

Water Resources

☆ Cooperative agreements are established with private landowners and other agencies which achieve healthy watershed conditions. Sediment inputs are reduced from known sources thus improving watershed health, especially in the Antelope and Butte Creek watersheds.

☆ Road stabilization, road closures, and fuel treatments reduce risks of future wildfires to limited riparian resources.

☆ Disturbance levels have decreased, stream channel conditions have improved, and no sub-watersheds in the AMA are considered Areas of With Watershed Concerns.

Riparian Reserves

☆ Riparian-dependent alder and aspen are promoted over upland species where both types exist. Areas where riparian vegetation was in remnant pockets are increased to stand size and provide substantial acreage, thus promoting nutrient cycling requirements in Antelope and Butte Creeks.

☆ Riparian reserves provide connectivity habitat through the AMA for late-seral dependent wildlife, between the Goosenest LSR and late-seral habitat on the McCloud plateau.

☆ Riparian reserves uses, such as recreation and grazing, continue but are managed to the extent necessary to protect riparian resources through Adopt-a-Streamside programs with partners that include range permittees.

Aquatic Species

☆ Butte and Antelope Creeks continue to provide a high quality inland recreational sport trout fishery and are acclaimed nationally by sportsmen and environmentalists. Amphibians and other riparian and aquatic dependent species have adequate habitat and populations have increased ten-fold.

Terrestrial Resources

☆ Late-seral stand structure is reestablished in eastside ponderosa pine stands providing for mature pine associated wildlife species. These stands have a variety of native forage, shrub (bitterbrush), cover habitats, and native bunch grasses restored, where possible, for wildlife; these are maintained with natural and prescribed fire. Juniper and white fir exist in historic areas or levels, and only exist as a minor component in pine stands. Commodity outputs are provided from a variety of resources which help economic diversity while maintaining a thriving ecosystem in pine communities. Large ponderosa pine is maintained in bald eagle special habitat areas while developing young pine for replacement roost trees. Due to collaborative management, desired conditions have considered ecological principles and processes, so that there are very few terrestrial species on the Endangered Species list. Landbirds are the indicator species for forest health instead of the northern spotted owl or goshawks in all eastside ecosystems in the west.

Little Horse Peak Research Area

☆ Efforts to enhance late successional structure is successful in interior pine forests and provides managers, citizens, and researchers conclusions to important interactions among birds, small mammals, insects, and soil arthropods. An understanding is reached on how changes in stand structure and species composition influence species abundance and diversity of terrestrial species in relationship to different management techniques. Many ecological responses to management activities and techniques have been established and provide a framework for future studies in other plant communities throughout the western United States.

Learning Opportunities include social, economic, and political knowledge.
- ❑ Water Resources,
- ❑ Terrestrial Resources, and
- ❑ Human/Social Resources.

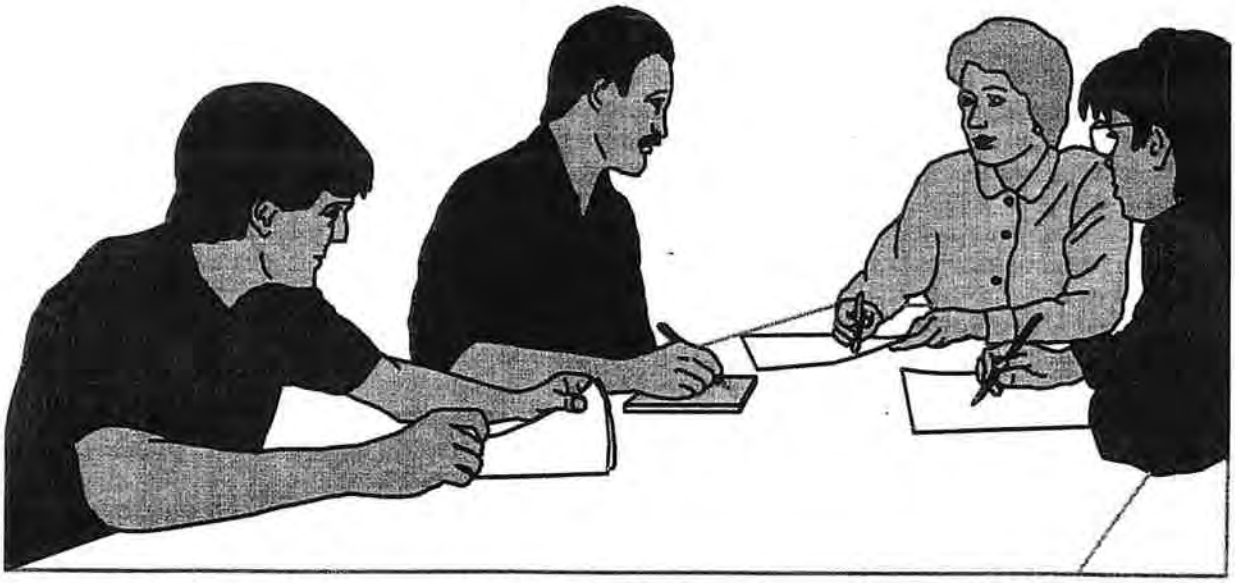
A Guide to Implementation, Restoration, Monitoring, and Experimental Activities include strategies for the following:
- ❑ Landscape Management,
- ❑ Watershed Restoration, and
- ❑ Research and Monitoring Projects.

Learning opportunities identify physical, biological, social, economic, and political information needed to make adaptive management work in the AMA. These learning opportunities were developed by the Goosenest Resource Team using information from public meetings. These opportunities correlate with findings from the *Goosenest AMA Ecosystem Analysis.* The purpose of each learning opportunity was also identified.

"And the trouble is if you don't risk anything, you risk even more."
Erica Jong

For adaptive management to work, management practices must be monitored and the results evaluated as to how well AMA goals from the Klamath National Forest Land and Resource Management Plan were achieved. Using this evaluation of past practices, future management practices are planned, tested, and adapted. These learning opportunities will be used in conjunction with *A Guide to Implementation, Restoration, Monitoring and Experimental Activities* which is described in the next section. Each proposed project will be examined to determine which learning opportunities might be appropriate. Some learning opportunities may better lend themselves to research projects. Even though a learning opportunity could be associated with a given project, funds to gather the information may not be available. Creative ways of funding these learning opportunities will be explored. Criteria will be developed to prioritize which learning opportunities should be emphasized.

In order to effectively implement and learn from the learning opportunities, collaboration with other agencies, partners, and the public is essential. The information gained from applying learning opportunities to projects will be shared widely using the Communication Strategy outlined in the **Education** Section of the *Third Element.*



Learning Opportunities

Learning opportunities were developed by the Goosenest Resource Team using information from public meetings. These are formatted to correlate with findings from *Goosenest AMA Ecosystem Analysis* and are **not** listed by importance.

The Team was asked to discuss the "Purpose" or "Why" they are asking the question(s) for learning. Any projects identified and developed on the Goosenest AMA will look at these opportunities. Appropriate learning opportunities will be identified for each project. Some learning opportunities are also addressed by research projects.

Even though a learning opportunity is listed, they are not automatically funded. When learning opportunities are identified and developed into projects, these projects may not be funded by the Forest Service. Therefore, alternative funding sources will need to be identified.

In order for us to effectively implement and learn from our learning opportunities, we need to collaborate with other agencies, partners and the public. Implementation Monitoring will need to be incorporated in most of the Learning Opportunities. Listed below by each resource area are the learning opportunities for the Goosenest AMA.

A. Water Resources

A-1. What is the purpose of each riparian reserve in the landscape? Is each riparian reserve functioning to meet it's purpose?

Purpose: A better understanding of the functions provided by riparian reserves is necessary to understand how to manage aquatic ecosystems in a sustainable manner because they are so limited in the AMA.

A-2. How can the remaining populations of native Rainbow Trout be protected and enhanced within local streams?

Purpose: Rainbow trout are the only trout species native to the AMA and they have been extirpated from most of their range by introduction of brown and brook trout. Remnant populations of native rainbows continue to exist in Butte Creek and Antelope Creek in isolated areas. Management strategies are needed to protect these local strains from extinction.

A-3. What are the population dynamics of common amphibian species within the AMA?

Purpose: An understanding of the population dynamics of amphibian species within the AMA is needed to successfully manage the habitat. Studies of amphibians, worldwide, have shown a dramatic decline in species and numbers over the last decade. Recent surveys in the AMA have revealed surprisingly large populations of two common amphibian species, indicating they may play a very large role in the AMA ecosystem.

B.Terrestrial Resources

B-1. What habitat supports mushrooms and what levels of harvest are sustainable?

Purpose: There is little known about fungi's role in ecosystems or its importance. There is a need to determine the effects of current harvesting practices on populations of fungi to learn how to manage this resource in a sustainable manner.

B-2. Is the implementation of snag retention guidelines effectively providing desired habitat conditions for snag dependent species?

Purpose: There is a need to find techniques to increase snag longevity and what species are actually utilizing snags, what size of snags, and for how long.

B-3. As habitat changes in eastside pine ecosystems, how does species distribution and diversity change?

Purpose: Determine how habitat use is related to management activities.

B-4. What role does fire play in eastside pine ecosystems to help achieve late-successional conditions?

Purpose: Determine how fire will be managed to help us achieve our desired conditions.

B-5. Is the distribution and relative abundance of American Marten and Pacific Fisher related to our management practices?

Purpose: Furbearer detection work has been conducted only in some areas of the AMA. Consequently, our knowledge on the distribution and relative abundance of marten and fisher is limited. A systematic survey would strengthen District knowledge on occurrence and relative abundance of marten and fisher, allowing a determination of the effects of land management activities.

B-6. What are survival rates of Coarse Woody Material (CWM) and snags in prescribed underburning areas?

Purpose: Coarse woody material (i.e. logs) and large snags are essential habitat elements for many species of wildlife, insects, plants, and fungi. Surveys of pre- and post-underburning densities and survival rates of logs and snags are needed to determine the effects of land management activities on these habitat elements.

B-7. At what rate does the tree canopy cover increase after commercial thinning?

Purpose: Canopy cover percentage is an important habitat element for many species of wildlife, including northern spotted owl (NSO), goshawk, marten, and fisher. Thinning forests increases growth thus providing long-term late-successional habitat for these species. However, thinning also reduces canopy cover. Knowledge of how fast canopy cover increases with tree growth could be useful in assessing short-term effects of thinning activities on wildlife species.

B-8. Is distribution of the great gray owl in the AMA related to management activities?

Purpose: Only one confirmed occurrence of this species is known, due to limited surveys, although potential habitat areas have been identified. Further surveys are necessary to determine species presence within AMA so the effects of management can be determined.

B-9. What is the effect of mushroom harvesting on other species (small mammals, deer, surveyed and managed species, predators, etc.)?

Purpose: If there are negative effects associated with commercial harvesting, what kind of mitigation/protection measures can be implemented? To prevent listing of fungi species as sensitive or endangered, there is a need to determine what management is appropriate to maintain or enhance species viability.

B-10. What are effective methods to regenerate bitterbrush? What are the effects of burning on bitterbrush?

Purpose: Determine which methods best achieve the desired conditions for maintaining this important species as mule deer and livestock browse.

B-11. How should lodgepole pine be managed to provide for long-term wildlife emphasis/diversity?

Purpose: There is a need to balance fuelwood/timber output with important wildlife needs in lodgepole stands. Also, there is a need to identify what percentage of late seral/mid seral/young stands of lodgepole exist (*AMA Ecosystem Analysis* displays 90% of public owned lodgepole in early-mid to mid size class, pages 3-26 and 6-9). There is a need to develop treatments to insure a mosaic of seral stages within the AMA.

B-12. What are the habitat requirements of bat species that breed, forage and hibernate within the AMA, and what aspects of management might affect them?

Purpose: When more is known about a species, management and/or protection of their habitat needs are able to be accomplished.

B. Terrestrial Resources *(continued)*

B-13. What are the effects to wildlife, plants, trees, soils, etc. from wide-scale thinning within the AMA? What are the impacts as thinning is occurring on District, Forest, and Provincially?

Purpose: Information gathered will help to spatially plan thinnings to best provide for species needs, such as mule deer, elk, and many passerine (perching birds) species that prefer dense pine thickets.

B-14. When and where is it feasible, logistically and economically, to use native plants (considering the small amount of seed collected)?

Purpose: There is a need to maintain native plant preserves and biological diversity, and to try and restore some plant species to former ranges. There is a need to make decisions where it is important to use native species.

B-15. Learn more about northern spotted owl (NSO) genetics on Goosenest Ranger District; specifically within the AMA and south. Are they more related to Oregon NSO or California NSO?

Purpose: At this time there has been little genetic research on NSO in this part of California. There is a need to compare blood sample results from the Goosenest Late Successional Reserve (LSR) westside and southern Oregon NSO (Klamath BLM) to the eastside NSO (AMA and McCloud Ranger District). To trace lineage, 1) local lineage (who the parents are and where they came from originally), and 2) larger scale, overall genetics. Important management considerations could be disclosed as a result of this work. This ties to Research Study Number R-12 (see page 19).

B-16. What is the relationship between NSO foraging and dispersal habitat?

Purpose: There is a need to help define Goosenest NSO foraging and dispersal habitat, and how management activities may affect that habitat.

B-17. What is the role of late-seral habitat within AMA? Is connectivity important? Is there, or was there ever, connectivity?

Purpose: To decide how to manage the ecosystem, there is a need to first learn more about connectivity, the role it plays, and how to implement connectivity across landscape scales. There is a need to define which vegetative communities are capable of providing late-seral habitat and characteristics and what is considered connectivity within them. Also, there is a need to identify if connectivity exists due to landscape fragmentation present in AMA (more intense in checkerboard ownership). Connectivity is not just for owls, it relates to most terrestrial species.

B-18. What are the elk herd movements and expansion in Goosenest AMA?

Purpose: It is important to understand the interactions of elk with silvicultural practices, grazing activities, and other human activities (dispersed recreation) to determine how to effectively manage their habitat. There is a need to determine the effects on other resources due to the elk herd expansion.

B-19. What are the habitat requirements for mountain lion and black bear in the AMA?

Purpose: Determine if their habitat needs are affected by land management activities.

B-20. Overstocked stands have become dominant in most landscapes. How does such stocking of woody stemmed plants affect the watershed dynamics of semi-arid and arid eastside forest and shrub ecosystems?

Purpose: There is a need to take advantage of collaborative opportunities to evaluate the effects of vegetation management on the sub-surface water to better understand management effects on the ecosystem.

B-21. What management techniques will best move us towards desired conditions for meadows and aspen stands?

Purpose: Since these plant communities are in close proximity, separating out the effects is crucial in ecosystem assessment and development of management scenarios.

B-22. What management techniques can be utilized to enhance small, isolated stands of unique plant species, i.e. Baker's Cypress, knobcone pine, foxtail pine, phacelia cookeii, etc.?

Purpose: Limited knowledge exists for the Bakers Cypress species in Northern California and the role of knobcone pine on the Goosenest. Both these species only exist in one location on the District, within the AMA.

B-23. What methods are successful in both natural and artificial regeneration of true fir stands in this ecosystem?

Purpose: There has been limited success on achieving adequate true fir stocking within 5 years of regeneration harvesting on the Goosenest Ranger District.

B-24. To what extent does our timber harvest and reforestation techniques affect the soil structure, fertility, and microorganisms?

Purpose: Management practices which maintain or enhance soil productivity are essential to a sustainable ecosystem.

B-25. What kinds of silvicultural treatments can be used within suitable Northern Spotted Owl (NSO) habitat to achieve a balance between stand health and NSO habitat requirements?

Purpose: To manipulate different vegetative communities to enhance northern spotted owl habitat. Using thinning from below or small patch cuts (less than 2 acres) to create diversity and variety of preybase in a homogenous stand.

B-26. Will western juniper reduction techniques, used in other parts of the West, be successful here in restoring native grasses which once dominated parts of the AMA?

Purpose: Many stands of western juniper today invaded what were once grassland habitats. Now juniper occupy sites, inhibiting growth of grasses and other vegetation. There is a need to determine which management practices will reduce this species invasion to a more desired level.

B-27. Can prescribed fire play a role in the management of riparian reserves?

Purpose: Fire may prove to be an efficient tool for riparian management in some cases. Aspen, in particular, are known to respond well to fire disturbance.

B-28. How to balance forest health with bald eagle habitat? Can winter roost area be managed to minimize large losses of suitable habitat to insects and disease?

Purpose: There is a need to balance short-term needs for roosting bald eagles, protect current roosting stands, and locate potential replacement stands. Current roosting stands, if overstocked, cannot be sustained forever. There is a need to develop a strategy to maintain and promote roosting stands.

B-29. How can we manage for multiple resource values associated with constructed water developments? What is the strategy for the future?

Purpose: A large portion of the AMA lacks water that is permanent in nature. Water developments, such as stock ponds and water troughs, provide water that is used by cattle, wild horses, birds, squirrels, bats, deer, coyotes, humans, and amphibians. There is a need to include in landscape management strategies ways to manage current and future water developments.

B. Terrestrial Resources *(continued)*

B-30. What kinds of silvicultural treatments can be used to create suitable replacement nest stands within known goshawk home ranges in the AMA and what strategies can be developed to maintain or create suitable foraging habitat within these goshawk home ranges?

Purpose: In order to maintain current home ranges, suitable nest stands (single-layered, greater than 40% canopy closure) must be available to replace existing stands for long-term occupancy to prevent loss of nest territories due to catastrophic events.

B-31. What is the current distribution of deer habitat elements: fawning, hiding and thermal cover, forage? Can a management plan be developed to protect or enhance these elements with regard to timber harvest planning?

Purpose: Concern about the decline in size of the McCloud Flats deer herd over the past decades has prompted a need for baseline data about the quantity and quality of existing deer habitat. The California Department of Fish and Game (CDFG) is currently refining descriptions for suitable deer habitat that can be used to determine the status of habitat in the AMA. There is a need to determine how to manage for a sustainable deer population.

C. Human/ Social Resources

C-1. What opportunities exist to improve or expand recreational experiences in the AMA?

Purpose: There is a need to encourage private investors to provide services that only the private sector can provide and to complement them with services the Forest Service can provide.

C-2. How can information be shared most effectively so that all parties can learn from present and past activities how best to manage in the future? How can existing information be used to enhance tourism opportunities in the local area?

Purpose: There is a wealth of knowledge available from our partners (such as Native Americans, researchers, local landowners, volunteer groups, and forest users) and our employees that can be used in adaptive management if methods to organize and share this information can be developed. These groups can be used to identify information of interest, communication techniques (such as interpretation), and funding sources.

C-3. How can we develop collaborative agreements to achieve common desired condition relating to road use?

Purpose: Road-related impacts, such as erosion and altered hydrology, are one of the top causes of watershed problems in the intermingled public and private lands (checkerboard ownership) of Butte and Antelope Creeks. There is a need to determine which management practices are the most effective and efficient for all parties.

C-4. How can we manage grazing to achieve stream channel stability?

Purpose: Stream Condition Inventories and monitoring results indicate that grazing practices in some areas may need to be modified to achieve desired conditions.

C-5. How does the AMA contribute to local socio-economic conditions?

Purpose: A better understanding of all resources and their contribution to the social/economic well-being of the area is lacking. There is a need to determine the economic benefits from commodities produced and these linkages to local communities in direct benefits.

C-6. How can the AMA target small sales for local labor markets, explore opportunities to develop new markets, and encourage the use of a wide variety of ground-sensitive equipment?

Purpose: There is a need to market currently under-utilized products, such as small material from traditional harvest operations or other products not economically feasible for larger operators. There is a need to explore uses of various equipment to determine which types would minimize ground disturbance, compaction, and create desired conditions. This could generate additional jobs for local residents who have the skills needed for "Tonka" type of equipment (i.e., zig-zag yarders, all-terrain vehicle (ATV) skidders, and pick-up trucks with winch attachments), helicopter and horse logging.

C-7. How can the Goosenest AMA information and learning best be shared and supported in a collaborative format?

Purpose: To listen, share information, and incorporate worthwhile ideas in adaptive management.

C-8. Where and how can the AMA staff develop partnerships or make available collaborative opportunities to hire local youth to carry out resource projects?

Purpose: There is a need to develop a program, such as Special Forest Products Harvesting, that can employ 50-100 teenagers per year. Expansion of existing programs such as the Youth Conservation Corps and California Conservation Corps should be explored.

C-9. What are the social and economic impacts of commercial mushroom harvesting versus timber harvesting? How can economic diversity be increased?

Purpose: Economic diversity is essential for a healthy social system. The AMA can contribute to gaining knowledge about social and economic effects of traditional and no-traditional activities.

A Guide to Implementation, Restoration, Monitoring, and Experimental Activities

The challenge now is to move towards the desired condition through implementing resource projects. Some restoration projects are included under Landscape Management Design. Watershed Restoration is being explored in collaboration with adjacent landowners. Some of these resource projects will be testing new methods of implementation in an experimental manner. An integral part of landscape management includes experimental activities, watershed restoration strategies as well as research.

Well-planned and well-monitored land management activities can be catalysts for learning and understanding the complexity of forest and rangeland ecosystems. Landscapes provide laboratories for learning and understanding of processes, populations, communities and ecosystems. Conscious design, layout, and replicated projects in the many ecosystems of the AMA are critical to future learning. Equally important is the follow-up monitoring of the multitude of physical and biological indicators which take the 'pulse' of the broad set of possible responses. Testing and selecting minimum, economically feasible elements which allow learning and management objectives is important.

Applications of knowledge and findings beyond the AMA is just as critical as local learning. Reports, seminars, workshops, professional meetings, and other outlets of information must all be used to share the successes, as well as non-successes, in tests of land management approaches.

Another charge for AMAs is experimenting to find better ways of meeting the intent of the Standards and Guidelines (S&Gs) in the NWFP. Implementation of S&Gs will allow the AMA staff to learn if we did what we said we were going to do. Effectiveness Monitoring determines if we met our goal, i.e. desired conditions. Validation Monitoring tests the most critical assumptions used to develop the S&Gs over large geographical areas and will happen overtime. (Refer to Appendix B - Monitoring).

Landscape Management Design

The following section includes an ecologically based Landscape Management Design. General descriptions of the various types of integrated resource projects that address specific AMA problems are outlined in the *Goosenest AMA Ecosystem Analysis*, Step 6 - Recommendations. Step 6 also addresses some restoration, monitoring, research, inventory needs, innovation opportunities and priorities (Red Flags).

Integrated resource projects, which include timber sales, can provide some of the blueprint to guide implementation, restoration, and monitoring. The Landscape Management Design covers integrated projects being considered in the short-term 3-5 year (fiscal year (FY) 1998 to 2005). Projects and completion dates are dependent on funding. These projects are outlined in Table 1, Projects by Landscapes in the AMA for Fiscal Years 1998-2005. Map I, AMA Landscapes, shows the location of the specific landscapes in the AMA. Map II, Integrated Resource Projects, displays the integrated resource projects and treatments. See Map Section at the end of this document.

"If you have made mistakes...there is always another chance for you....you may have a fresh start any moment you choose, for this thing we call "failure" is not the falling down, but the staying down." **Mary Pickford (1893-1979)**

Table 1. Projects by Landscape in the AMA for Fiscal Years 1998-2005.				
Landscape	**Benefitting Resource**	**Project**	**Benefit &/or Outputs**	**Completion Date**
All Landscapes	All Resources.	Lodgepole Management Plan.	Increase wildlife habitat and provide fuelwood.	FY 99
All	All Resources.	Survey and report cultural sites.	Interpretation.	On-going & Future
All	All Resources.	Prescribed fire.	Fuel reduction and increase in forbes.	On-going & Future
All	TES species; survey and manage species.	Monitor all known nesting roosting sites, any future denning, nest hibernating, roosting sites.	Information about the species and habitat.	Ongoing & Future
All	Big game.	Deer habitat capability analysis; develop rating system; models.	Improved habitat.	FY 99 Future
All	Big game.	Habitat restoration burning, mowing, planting, pruning, mountain mahogany.	Improved habitat.	FY 99 Future
All with potential habitat.	Willow flycatcher, great grey owl, Townsend's Big-eared bat.	Inventory. Determine occupancy of suitable habitat.	Increased acres of habitat.	Annually
All with meadows	Wildlife (birds & mammals), most notably deer, elk and great grey owl.	Maintain forested edge surrounding meadows.	Increased acres of habitat.	Ongoing & Future
All areas with deficient snag & CWM.	All wildlife associated with CWM and snags.	Create & maintain snags.	Increased levels of snags and CWM.	Future
All with potential habitat.	Upland birds.	Habitat improvement.	Increased acres of habitat.	Future
All within pine zone dominated	Snag/CWM in pine landscapes associated wildlife; flammulated owl, bat species.	Develop a experimental design, to test CWM, snags longevity with prescribed fire; monitor change in wildlife.	Report/knowledge.	FY 99
All	Trails.	Assess the potential for hiking, wildlife viewing, mountain biking, horseback riding, and ATV trails where appropriate. Develop signing and trail system maps and guides for those activities.	2-3 miles.	Every 2 years.
All	TES Species, Timber Sale Planning, Relationships with USFWS	Map the Managed Pair Areas at the Typhoon (KL-3295) & Garner Mtn. (KL-0281) activity centers & delineate MLSAs for these sites & incorporate into AMA Guide.	Late seral species	Ongoing & Future

Table 1. Projects by Landscape in the AMA for Fiscal Years 1998-2005.				
Landscape	**Benefitting Resource**	**Project**	**Benefit &/or Outputs**	**Completion Date**
All	TES, Timber Sale Planning	Investigate & develop opportunities to enhance Northern Spotted Owl dispersal habitat between the Oregon Cascades & Northern Sierra Nevada Ranges.	Re-establish the link between Northern and California Spotted Owl.	Ongoing & Future
All	TES Species, dispersal corridors also benefit game species, improved USFWS Consultation process.	Develop an owl dispersal plan across adjoining landscapes, coordinating with USFWS & Shasta-Trinity.	Protection of corridors will help wildlife species & TES. Create mosaic within managed landscape.	Ongoing & Future
Antelope	Eastside pine stand health and wildlife habitat.	Kendall Timber Sale.	800-1000 thousand board feet (MBF).	FY 99
Antelope/Butte	Eastside pine stand health and wildlife habitat.	Tennant Station Timber Sale.	2-4 million board feet (MMBF).	FY 99
Antelope/Butte	Dispersed recreation, aquatic health.	1) Reduce resource damage occurring at dispersed sites by defining and signing camping areas and providing sanitary facilities.	Four sites at Frog Lake; one site, Section 15 (green bridge middle crossing on Antelope Creek); one site Section 15 (white bridge upper crossing Antelope Creek).	1) By the year 2000.
Antelope/Butte	Dispersed recreation, aquatic health.	2) Improve accessible fishing access to portions of Butte and Antelope Creeks.	Better access to fishing for public.	2) By the year 2004
Antelope/Butte	Dispersed recreation, aquatic health.	3) Construct Three-mile Rainbow Crest Trail.	Trail access.	3) By the year 2005
Antelope/Typhoon/ Wildhorse	Accelerate pine development. Determine small bird & mammal responses to management.	Little Horse Peak Research Area	18 MMBF (see page 25, R-11)	FY 98
Antelope/Typhoon	Range and wildlife.	Haight Mtn. Allotment Environmental Assessment (EA).	145 C & 36 Y *	FY 99
Badger	Wildlife associated with lodgepole; forest health.	Lodgepole restoration/monitor for furbearers.	Increase wildlife habitat and provide fuelwood.	FY 99 and beyond
Badger	Eastside pine stand health and wildlife habitat.	Kelly Pass	1,500-2,500 MBF	FY 99
Badger	Improve forest health and big game habitat.	Hi Thin.	1,500 - 3,000 MBF	FY 2000
Badger	Species assoc. with late-seral pine.	Tamarack Thin/Chip.	0.9-2 MMBF	FY 99

Table 1. Projects by Landscape in the AMA for Fiscal Years 1998-2005.				
Landscape	**Benefitting Resource**	**Project**	**Benefit &/or Outputs**	**Completion Date**
Badger	Non-fossil fuel energy generation.	Fourmile Hill Geothermal Development	20-22 million dollars in receipts to Siskiyou County over 20 years, and 22 local jobs during construction phases.	Future
Badger/Typhoon	Range and wildlife.	East Red Rock Allotment EA.	240 C *	FY 2000
Badger/Wildhorse	Range and wildlife.	Three Sisters Allotment EA.	880 C & 15 WH *	FY 2005
Butte Creek	Goshawks and small mammals.	Shingle Springs Area Restoration.	Increase wildlife habitat and provide fuelwood.	Outyear
Butte Creek	Forest health and wildlife.	Trapper	600-1,000 MBF	FY 2000
Butte Creek	Winter Recreation.	1) Improve RV access to Deer Mtn. Snow Park by providing additional parking and facilities.	Increase user capacity.	1) FY 1998
Butte Creek	Winter Recreation.	2) Expand parking area to accommodate increased use of Deer Mtn. Snow Park.	Increase user capacity.	2) By the year 2002
Butte Creek	Winter Recreation.	3) Construct snowmobile trail to the top of the Whaleback.	Increase user capacity	3) By the year 200
Butte Creek	Winter Recreation.	4) Construct safe storage facilities for groomer and other equipment at Deer Mtn. Snow Park.	Protect equipment	4) By October 1998
Butte Creek	Winter Recreation.	5) Provide information to analyze feasibility of a four seasons resort at Alder Creek Divide on private land with associated ski resort on National Forest lands.	Increase user capacity and provide local jobs	5) Future
Butte Creek	Range and wildlife.	1) Dry Lake Allotment EA.	1) 155 C *	1) FY 98
Butte Creek	Range and wildlife.	2) Mt. Hebron Allotment EA.	2) 50 H *	2) FY 2004
Butte Creek	Forest health; wildlife.	Mudlake Timber Sale.	1 - 2 MMBF	FY 99
Butte/Grass Lake/Little Shasta	Range and wildlife.	Horsethief Allotment EA.	100 C *	FY 97
Butte/Grass Lake/ Sheep Mountain	Range and wildlife.	Deer Mtn. Allotment EA.	100 C *	FY 2002

* Current numbers from *Goosenest AMA Ecosystem Analysis*, page 3-38. C = Cow/Calf pairs; WH = Wild horses; Y = Yearlings; H = Heifers.

Table 1. Projects by Landscape in the AMA for Fiscal Years 1998-2005.				
Landscape	**Benefitting Resource**	**Project**	**Benefit &/or Outputs**	**Completion Date**
Butte & future sale areas in other landscapes.	Wildlife unit marked for species associated with dense canopy closure.	Blue Timber Sale	1 - 3 MMBF	FY 98
Grass Lake	Large pine dependent terrestrial species (flam. owl, several bat spp. & bird spp.), forest health, fuels.	Part of Little Deer Thin (Section 12).	2 - 4 MMBF	FY 98/99
Grass Lake	Big game (hiding cover, forage). Montane chaparral associated species.	Erickson Flat Manipulation/management of montane chaparral.	Improve big game spring & summer habitat.	Ongoing & Outyear
Grass Lake	TES species, mammals & birds.	Inventory & monitoring of late-seral habitat for connectivity dispersal due to fragmented landscape.	Better understanding of habitat use and disperal needs.	Ongoing & Future
Grass Lake	Create water source near newly acquired caves for large mammals, birds, & bats.	Pluto guzzler installation.	Increase habitat quality & capability	1998
Grass Lake	Forest health; increase diversity with grasses/forbs benefits all.	Murphy Thin	300-500 MBF	Outyear
Landscapes with suitable conditions.	Riparian associated species; wildlife associated with wetland.	Wetlands restoration and improvements.	Healthy riparian areas.	Ongoing & Future
Landscapes with northern spotted owl home range/100-acre Managed Late-Successional Reserves (MLSR).	Northern spotted owl; other late-seral species benefit as well.	Develop prescription to promote/enhance northern spotted owl habitat.	Improved/sustainable 100 acre MLSRs.	Future
Little Shasta	Late-seral dependent wildlife species; forest health; fuels	Jones CT Precommercial Thin & Commercial Thin	100-200 MBF	FY 98/99
Little Shasta and all landscapes with potential habitat (meadows)	Terrestrial species; neotropical migrants; small mammals, bats; TES species dependent on small prey, especially great grey owl, marten, northern spotted owl.	Monitor/Inventory bird and mammal species with restoration of dry meadows.	Better understanding between interaction of animal populations & dry meadows.	FY 98 to Future
Little Shasta	Large pine-dependent terrestrial species (flam. owl, several bat spp. & bird spp.), forest health, fuels.	Davis Cabin/Little Deer Commercial Thin	2-4 MMBF	FY 98/99

Table 1. Projects by Landscape in the AMA for Fiscal Years 1998-2005.				
Landscape	**Benefitting Resource**	**Project**	**Benefit &/or Outputs**	**Completion Date**
Sheep Rock	Bat species, especially Corynorhinus Townsend II (Townsend's Big-eared Bat).	Pluto Cave Management Plan.	Improved bat habitat.	FY 97
Sheep Rock	Bat Species, especially Corynorhinus Townsend II.	Pluto Cave Recreation Access Plan/restriction guidelines.	Improved bat habitat & recreational experience.	FY 98
Sheep Rock	Various Recreation.	1) Improve existing hang gliding and parasailing opportunities by providing parking areas, picnic areas, vault toilets, and improved launching and landing sites.	Increase use capacity.	1) On-going
Sheep Rock	Various Recreation	2) Develop day use and interpretative area associated with Pluto Cave.	Complete a plan to protect and enhance existing resources.	2) 2001
Sheep Rock	All resources especially species associated with lodgepole pine; develop mosaic of seral stages in this plant community.	Military Pass and/or Whaleback.	400-600 MBF &/or 100-500 MBF Whaleback - Improved/sustainable watershed condition.	FY 98/FY 99
Sheep Rock	Wildlife species associated with large pine; green trees and snags; fuels; forest health; and range.	Pomeroy Timber Sale; reduce white fir, promote development of large pine; promote grasses/forbs.	1- 3 MMBF	FY 99
Wildhorse	Species associated with late-seral mixed conifer (northern spotted owl, northern goshawk, marten); big game.	Garner Mountain Timber Sale Thin to increase diameter & future canopy closure; monitor slash piles left for wildlife; manage montane chaparral.	1- 3 MMBF	Outyear

Refer to the MAP SECTION for Map III - Integrated Resource Projects Within AMA Landscapes, which summarizes the projects by year and location.

Watershed Restoration

The following section provides a platform to work and collaborate with adjacent landowners on restoration activities for Butte and Antelope Creeks.

Small Landowner Cooperative Opportunities exists to develop partnerships with small land owners within AMA boundaries. It is important that a foundation of trust be established between Agency and landowners who are very much a part of the ecosystem.

Community Cooperative Projects for watershed health will focus on a collaborative effort to maintain or improve watershed health. Forest Service specialists can provide skills and some resources to interested land owners concerning forage production for livestock and wildlife, timber management, water quality, and fisheries production.

As landowners determine a need to complete management plans for their property, they can request Forest Service assistance, for areas in the AMA. Any data or analysis remains landowner property. Feedback on a one page questionnaire for landowners will be developed to document efforts usefulness for them.

> *"Avoiding danger is no safer in the long run than outright exposure. The fearful are caught as often as the bold."*
>
> Helen Keller (1880-1968)

The Watershed Restoration as of June 1999, which includes working through community collaboration with small landowners within the AMA, will be accomplished by providing:

- Submitting joint grant proposals to acquire funding;
- A listing of contacts and landowners within the AMA;
- Support for habitat surveys and condition assessments on private lands;
- Provide technical assistance for rehabilitation project design; and
- An educational strategy:
  - To build a library of restoration literature and pamphlets specific to aquatic and riparian habitats found within AMA; and
  - Determine locations of stream reaches on public or private lands for examples of desired conditions for specific stream types.

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Research & Monitoring Projects

Long-term Studies

The following section includes short descriptions of research studies underway before and after AMA designation.

R-1. Decomposition of Small Diameter Woody Debris of Red Fir Determined by Nuclear Magnetic Resonance - Purpose: To determine for red fir stands: 1) how production and circulation of organic matters are affected by nitrogen fertilization and stand density; and 2) what influences thinning and nitrogen fertilization have on soil formation? Commun.Soil Sci.Plant Anal., 29(17&18), 2691-2704 (1998)
Contact: *Bob Powers (530) 246-5455 Pacific Southwest Research Station (PSW), Redding, CA.*

R-2. Thinning Red Fir Saplings - Purpose: To determine influence of several thinning intensities on growth and development of dense red fire sapling stand.
Contact: *Bill Oliver (530) 246-5455 PSW Redding, CA.*

R-3. Northern Province Rangeland Condition and Trend Study - Purpose: To complete an analysis of long-term vegetation changes in Rangeland types in the Northern California Province including the Goosenest AMA. The Forest Service established several hundred condition and trend plots between the 1950s and the 1970s in rangeland communities. This data is being analyzed to show long-term vegetative changes and trends in various vegetative communities.
Contact: *Jim Stout (530) 398-4391 Goosenest Ranger District, Macdoel, CA.*

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Recent Studies

R-4. Bird Associations with Targeted and Desired Forest Characteristics on the Goosenest Adaptive Management Area. - Purpose: To develop and test multivariate analysis techniques using a bird census point-count network for predicting the effects of management activities on landbird populations.
Contact: *John Alexander email: fitzbew@telis.org*

Completed

R-5. A Landscape Characterization of Nesting Northern Goshawk Habitat in Northern California Using GIS and Remote Sensing. - Purpose: To identify features that were significant to goshawk nests and provide information about vegetation distribution and fragmentation within landscape.
Contact: *Bonnie Allison (530) 398-4391, Goosenest Ranger District, Macdoel, CA.*

R-6. Habitat Structure Analysis of Northern Goshawk and Northern Spotted Owl, Nesting Stands in the Eastern Cascades. Purpose: To identify features or similarities in habitat resource use of nesting goshawks and northern spotted owls.
Contact: *Leslie Rissler (804) 984-4184 University of Virginia, Charlottsville, VA 22903*

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On-going

R-7. Population Ecology of Northern Goshawks in the California Cascades. - Purpose: To establish a baseline of territory occupancy, reproductive success, and survival of adults to subsequently monitor responses of these population parameters to changes in vegetation.
Contact: *Phil Detrich, (530) 842-5763 U.S. Fish & Wildlife Service (USFWS), Yreka, CA and Brian Woodbridge, (530) 841-4528 Klamath National Forest, Yreka, CA.*

R-8. Detection of Furbearers in AMA - Purpose: To utilize remote sensing cameras and trackplates to detect American martin and determine habitat relationships.
Contact: *Brian Woodbridge (530) 841-4528, Klamath National Forest, Yreka, CA.*

R-9. Prey Delivery and the Fledging Success of the Northern Goshawk. Purpose: To investigate the effect of prey delivery on survival of nestling goshawks and to identity prey required for survival and reproduction in northern California.
Contact: *Robert McCoy (707) 839-8371 or E-mail: R1LMcCoy@aol.com*

R-10. NSO Population Density Study - Purpose: To determine territory fidelity and movements within a small, relatively isolated population of northern spotted owl at the extreme eastern edge of the subspecies ranges.
Contact: *Christy Cheyne (530) 398-4391, Goosenest Ranger District, Macdoel, CA.*

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New Studies *(since AMA inception)*

R-11. Accelerating Old Growth in Eastside Pine (Little Horse Peak Research Plots) - Purpose: To test how different silviculture treatments, including underburning, can accelerate late-seral characteristic development and effects on small mammals and birds.
Contact: *Bill Oliver and Kathy Harcksen (530) 246-5455 PSW Redding, CA*

R-12. Habitat Assessment for Big Game Species - Purpose: To complete an inventory and mapping of bitterbrush location for improving and implementing trials of different browse enhancement techniques and applications to improve big game forage.
Contact: *Jim Stout (530) 398-4391 Goosenest Ranger District, Macdoel, CA or Tim Burton (530) 459-1129 California Dept. of Fish and Game, Yreka, CA.*

R-13. Effects of Timber Harvest on Density and Long-term Occupancy of Northern Goshawk Territories in the Southern Cascades of California - Purpose: To compare levels of timber harvest activity with the density and patterns of long-term (7-17yrs) occupancy of goshawk territories. Timber harvest units and goshawk territories have been entered into Arc/Info GIS. Harvest intensity and nesting habitat will be quantified for each goshawk territory and for coinciding landscapes. ***Contact:*** *Brian Woodbridge & Bonnie Allison (530) 841-4452, KLamath National Forest, Yreka, CA.*

Element III--Social/ Human Dimension

This section contains information concerning:

- ❑ Involved Communities,
- ❑ Community Strategy,
- ❑ Integration,
- ❑ Education, and
- ❑ Coordination of Activities.

The idea of adaptive management is to try different activities and techniques, designed to achieve AMA objectives, then monitor them to determine how best to achieve desired conditions.

Involved Communities

This section lists organizations, special interest groups, businesses, and individuals that have influenced or are actively involved in adaptive management on the Goosenest AMA.

Organizations, special interest groups, and businesses that have influenced or are actively involved:

Siskiyou County Action Plan Committee
Butte Valley Action Plan Committee
Ore-Cal Resource Conservation and Development
Siskiyou County Economic Development Council
Klamath Tribes
Shasta Tribe
Butte Valley Indian Council
Klamath Provincial Advisory Committee (KPAC)
Siskiyou Round Table
Siskiyou County Board of Supervisors
Siskiyou Fly Fishing Association
Kiwanas Club, Weed/Lake Shastina Chapter
Siskiyou County Sportsman Association
Mt. Shasta Snowmobile Club
Butte Valley Chamber of Commerce

Involved Communities:

Weed	McCloud	Mt. Shasta	Montague
Yreka	Dorris	Big Springs	Macdoel
Lake Shastina	Tulelake	Mt. Hebron	Klamath Falls
Tennant			

National Groups:

Ducks Unlimited
Rocky Mountain Elk Foundation
Fly Fishing Association
Audubon Society

Federal and State Agencies:

USFWS
CDFG
California Dept. of Parks and Recreation
PSW
Humboldt State University
University of California, Davis
Siskiyou Training and Employment Program (STEP)

Individuals:

Jim Cockran
Sherrie Coonrod
Dick Cowardin
Jim De Pree
Ed and Betty Hart
Marjorie Hazelwood
Nancy Ingalsbee
Lowell Jones
Carol McKay
Richard Sargent
Joan Smith
Skip Soule
Sally Wells

> "One wonders what would happen in a society in which there were no rules to break. Doubtless everyone would quickly die of boredom."
> *Susan Howatch British writer, b. 1940*

Community Strategy

This section lists completed community action plans, some resources and partnerships resulting through implementation of the community action plans and/or integration of ecosystem management activities through the AMA.

Rural Development Program.
Rural Development is the management of human, natural, technical, and financial resources needed to improve living conditions, provide employment opportunities, enrich the cultural life, and enhance the environment of rural America. In the Forest Service, rural development is accomplished through partnerships.

The Forest Service provides leadership in working with rural people and communities on developing natural resource-based opportunities and enterprises that contribute to the economic and social vitality of rural America by helping people solve their local situations in ways that enhance the quality of the environment in accordance with our existing authorities.

Implementation of Community Action Plans

Community Action Plans are a step-by-step program to help people visualize what they would like their community to be in the future and to develop strategies to work towards accomplishing that "vision." It has been used in a number of individual communities in Siskiyou County and has been an effective tool in improving communication, addressing public issues, establishing partnerships, and working constructively to accomplish common objectives. For copies of community action plans contact local communities chambers or Forest Service.

List of Completed Community Actions Plans:

Butte Valley
McCloud
Montague
Mount Shasta
Siskiyou County
City of Weed
Yreka

These communities are the closest to the Goosenest AMA and therefore have the potential to be influenced by some management activities.

Goals

To manage and preserve resources, both natural and human, while maintaining the quality of life that is desired, primarily clean air, scenic beauty, strong family values, sense of community in an effort to provide for future generations through economic development geared to a rural environment.

Quality of Life: To maintain a quality of life that is rural without all the problems of large metropolitan areas.

Economic Stability: To provide a stable economy for Siskiyou County that doesn't compromise a healthy environment or rural quality life style.

Accomplishments

1. Facilitated development of Community Action Plans for each community in Siskiyou County to provide direction and monitor growth and economic development accomplishments into the year 2015.

2. Awarded 41 grants in the last 4 years geared to diversifying and stabilizing the economy of Siskiyou County. The grant proposals were all tied to a Community Action Plan from one community or another, and are in line with the strategies and goals stated above.

3. Of the grants awarded, all focused on one or more of the goals stated above. Of the 41 grants awarded, nine were directly related to having a healthy environment, 26 promoted quality of life, and 31 focused on economic stability of the area.

4. The most important accomplishment has been the various groups and organizations in each community working together to focus on the same mission, vision, and goals to complete projects to improve their communities. Equally as important is communities are starting to work

The grants related to the communities involved with the AMA are listed below by goal.

Grants by Goals, Related to the Goosenest AMA Communities

Economic Stability
Ore-Cal Economic Diversification
Pride of Siskiyou (south county)
Yreka Welcome Center
Siskiyou County Development Project (county-wide)
Board Leadership (4 counties)
Process Technology Training Center (3 county-wide)
Superior Cal Tech Asst.
County Tourism (county-wide)
Ore-Cal Economic Diversification (4 counties)
Natural Resource Small Business (south county)
Regional Products Catalog
Western Juniper

Quality Of Life
Yreka Welcome Center
Process Technology Training Center
Main St. Enhancement (City of Dorris)

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Integration

This section includes a plan to integrate community action plan projects related to AMA resources and technical objectives. This section contains united (or a synthesis of) ideas between local communities, business, Federal, State, and local Tribes. It documents existing problems or conflicts in need of resolutions and on-going projects.

Integration Opportunities

The following Integration Opportunities (IOs) resulted from comparing local ***Community Action Plans*** (CAPs), *Learning Opportunities* (LOs) from this document, and ***Step 6 - Management Opportunities from AMA Ecosystem Analysis*** (MOs) to identifying commonalities related to the AMA. Table 2 displays the results of this process.

AMA local partners representing their communities, Ore-Cal Resource Conservation and Development (RC&D), and Forest Service Rural Development staff spent a day reviewing and compiling the following opportunities, identified from the documents above. The intent was to integrate resource needs with human desires (recreation, social). Identifying opportunities in CAPs and AMA documents may make local grant proposals more competitive due to the integrated community support.

For instance, the idea to research a multi-fuel cogeneration facility came from this integration process of reviewing Siskiyou County and Butte Valley CAPs and Goosenest Ecosystem Analysis. Resource managers are familiar with existing resources but not all available markets or value-added products, so hopefully integration will lead to other opportunities not currently listed below (Table 2).

The quality of a person's life is in direct proportion to their commitment to excellence, regardless of their chosen field of endeavor.

Vince Lombardi

Table 2 - Learning Opportunities (LOs), Community Action Plans (CAPs), Management Opportunities from the Goosenest AMA Ecosystem Analysis (MOs) and Integration Opportunities (IOs) by Issue Areas.			
Employment			
LOs	C-8: Where and how can the AMA staff develop partnerships or make available collaborative opportunities to hire local youth to carry out resource projects.	C-5: How does the AMA contribute to local socio-economic conditions?	C-6: How can the AMA target small sales for local labor markets, explore opportunities to develop new markets, and encourage the use of a wide variety of ground-sensitive equipment?
CAPs	Matches Siskiyou County CAP Project: Opportunities for Youth and Senior Citizens (page 21).	Matches many CAPs: Linked permanent employment with Family Wage level. -- Siskiyou County CAP, p. 43; -- Butte Valley CAP, p. 14; -- Mt. Shasta CAP, p. 27; -- McCloud CAP, p. 8; -- Yreka CAP- Utilize Local Work Force; -- Weed CAP- Issue #17: Need higher percentage of population who have higher paying jobs.	
MOs	MO # 45: Red Flag - Develop an ecologically sustainable timber harvest program.		
IOs	Work with community members and local entrepreneurs to match employment opportunities with resource needs to help diversify community-based economic activities. Take advantage of Federally sponsored programs, STEP, and Ecosystem Management Training to provide training in resource workforce skills.		
Opportunities for Small Diameter Logs			
LOs	B-11: How should lodgepole pine be managed to provide for long-term wildlife emphasis/diversity?	C-6: How can the AMA target small sales for local labor markets, explore opportunities to develop new markets, and encourage the use of a wide variety of ground-sensitive equipment?	
CAPs	Matches Siskiyou County CAP, pp. 28-29 - sponsor healthy, sustainable natural resource base and Butte Valley CAP, p. 13 - promote new business.		
MOs	Goosenest Ecosystem Analysis, pp. 6-8, MO #19 - Thin overstocked stands, capture mortality, promote development of healthy ponderosa pine and white fir in historic ranges; MO #22 - Target areas identified as having high fire behavior potential....and treatment of fuels.....to improve forest health.		
IOs	Complete a feasibility study to determine best use of thinning residues or other manufacturing commodities from these fuels. Proposal for Fuel Wood Management Study to determine use of materials may include co-generation facility and forest product sort yard in Butte Valley.		
NOTE: While developing economic opportunities in this County, this may require re-tooling or reconstructing of some current mills. This opportunity does not imply that we will be providing opportunities for existing mills in the volumes of the past (The AMA product is small logs for next decade or two for the most part).			

Table 2 - Learning Opportunities (LOs), Community Action Plans (CAPs), Management Opportunities from the Goosenest AMA Ecosystem Analysis (MOs) and Integration Opportunities (IOs) by Issue Areas.		
Value-added Products		
LOs	B-26: Will western juniper reduction techniques, used in other parts of the West, be successful here in restoring native grasses which once dominated parts of the AMA?	
CAPs	Match - Most CAPs include Marketing, Manufacturing and Cottage Industries. Juniper can be a value-added forest product. Stumps make table bases or legs, and boles are used for firewood or chips.	
MOs	MO #13: Reduce juniper to near historic levels, re-establish pine in suitable locations, increase bunch grasses and forbes.	
IOs	Develop a Forest Products Sort Yard to provide individual landowners a location to pool products (i.e, juniper) prior to removal and development into value-added products (i.e., a current market exists for table stands made from juniper stumps or butt logs). Studies on juniper utilization are on-going or near completion in eastern Oregon.	
NOTE: Value-added products are products developed from previous existing source, i.e. making a purse out of rawhide; table legs from juniper boles.) Miscellaneous Forest Products includes: Christmas trees, boughs, firewood, cones for seed and decoration, post and poles, live plants, berries and fruit, rock products, weaving and dyeing materials, stumps and burls, and mushrooms.		
Silviculture		
LOs	B-25: What kinds of silvicultural treatments can be used within suitable owl habitat to achieve a balance between forest health needs and owl habitat requirements?	
CAPs	Matches most CAPs; Silvicultural opportunities to provide outputs (jobs, revenue, forest health, mills). Most CAPs include Marketing, Manufacturing and Cottage Industries.	
MOs	MO #45: **Red Flag**-Develop an ecologically sustainable timber harvest program.	MO #52: **Red Flag**-a) Identify timber harvest opportunities which capture mortality and/or thin overstocked stands. b) Offer sales while timber has highest market value.
IOs	Examine feasibility of AMA/ pilot stewardship contracts, service contracts and other innovative techniques.	
Tourism/Visitors *(information as well as marketing)*		
LOs	C-2: How can information be shared most effectively so that all parties can learn from present and past activities how best to manage in the future? How can existing information be used to enhance tourism opportunities in the local area?	
CAPs	Matches most CAPs: Maps/videos/tours/media/access (McCloud & Butte Valley CAPs mentioned transportation). McCloud CAP mentions a visitor center. Butte Valley schools and the Museum desire a native plant walk.	
MOs	MO #41: Conduct archival research on each transportation route. Develop and provide interpretive signing on Military Pass, Yreka Trail, Ball Mountain Road, Tickner Road, and Davis Road.	MO #35: Conduct a variety of research questions for each type of site. Provide interpretation of research to increase our knowledge.
IOs	Utilize field schools and programs such as "Windows on the Past" to display information. Develop partnerships with existing organizations interested in management of historical roads and trails.	

Table 2 - Learning Opportunities (LOs), Community Action Plans (CAPs), Management Opportunities from the Goosenest AMA Ecosystem Analysis (MOs) and Integration Opportunities (IOs) by Issue Areas.				
Education				
LOs	C-7: How can the Goosenest AMA information and learning best be shared and supported in a collaborative format?		C-8: Where and how can the AMA staff develop partnerships or make available collaborative opportunities to hire local youth to carry out resource projects?	
CAPs	Butte Valley CAP, p. 32.		Siskiyou County CAP, p. 22.	
MOs	MO #36: **Red Flag**-Increase exposure of school children and other community members to National Forest Activities.			
IOs	Use outdoor education center (day use) developed with local school system; get corporate sponsors to help with funding (matching these will help with gaining this funding). Adopt-a-Watershed Program.	Annually Adopt-A-School, and rotate each year to another interested school. Look for private and Federal opportunities, and have the class receive school credit. Use the interdisciplinary team process with cooperators to form ideas and projects, then take it to schools.	Develop Conservation Education System and Career Counseling at Primary and Middle Schools (i.e. , Career Day for 7-8 graders).	Promote Shadow Program for high school students and incorporate Basic 32 (Fire Training) into school classroom and provide opportunity to learn about prescribed underburns from practical experience.
Recreation				
LOs	C-1: What opportunities exist to improve or expand recreational experiences in the AMA?			
CAPs	Matches Most CAPs: Hwy 97 corridor/ Scenic Byways; winter sports areas; wildlife and scenic viewing; tourism and marketing.		Weed Issue #14, McCloud Issue #13, Mt. Shasta - p. 27, Butte Valley - p. 14 and Siskiyou County - p. 27 CAPs: Horseback riding, camping, fishing, hunting, and boating.	
MOs	MO #37: Explore possibilities to enhance winter recreation activities or users in the AMA.			
IOs	Support local existing recreational opportunities and generate outside interests to promote expansion.			

Table 3 - Learning Opportunities (LOs), Community Action Plans (CAPs), Management Opportunities from the Goosenest AMA Ecosystem Analysis (MOs) and Integration Opportunities (IOs) by Issue Areas.		
Fire Reduction/Community Involvement in Fire Prevention		
LOs	B-4: What role does fire play in eastside pine ecosystems to help achieve late-successional conditions?	
CAPs	Matches urban interface concerns (reference quality of life=safety). McCloud CAP Issue #3, mentions fire break around community. Siskiyou County CAP, p. 28. Defensible space.	
MOs	MO #22: Target areas identified as having high fire behavior potential for further ground truthing and treatment of fuels, where appropriate, to improve forest health.	
IOs	Develop "Community Forest Interface" Program (this term would mean more to local people than "Urban Interface"). Collaboration between Forest Service, private land owners and other agencies to develop community-specific projects.	
Water		
LOs	B-29 - How can we manage for multiple resource values associated with constructed water developments? What is the strategy for the future?	C-4 - How can we manage grazing to achieve stream channel stability?
CAPs	Matches some CAPs concerned about Water Use, Quality, and Quantity. Siskiyou County, pp. 27-29.	
MOs	MO Water Resource Recommendations; #1-3, 5-9 and Human Dimension #51 (see pages 6-4, 6-5, & 6-14 in the *Goosenest AMA Ecosystem Analysis*).	
IOs	Antelope and Butte Creeks have opportunities for collaborative management. Recreational Link - use of water for snowmaking for possible ski resort. Geothermal Project Link with College of the Siskiyous and Forest Service employment training. Info/Educational Link (snowmaking or riparian areas). Agricultural (grazing/wildlife/fisheries/municipal users).	
Funding/Resources are a component of all in the table above. This includes Partnership, Grants, MOUs, Sponsors, Volunteers, and Agreements. ***Note***: All collaborative efforts will need to take the Integration Opportunities and tie them to Funding Resources, i.e. grants, corporate sponsors, partnerships (both private and public), collaboration with user groups, MOUs, Agreements, and volunteers or organized groups.		

Education

This section describes various forums to learn about the Goosenest AMA, associated projects and experiments, current partnerships, and how to get involved.

Currently, as invitations are received or solicited, presentations are made to local organized groups. These provide basic information on the definition of adaptive management, the location and features of the Goosenest AMA, and what current projects are being implemented. A number of other techniques have been used to share information with the widest audience possible and allow volunteer involvement. These techniques include periodic updates through a newsletter and media releases, field trips to various projects, collaborative workshops, studies, and open houses.

> **" Education is a wonderful thing but it doesn't go far enough. It merely teaches a man how to speak, not when or how long."**
>
> ***Author unknown***

As part of a communication strategy, the above named techniques will continue to be used in the future in addition to any others that are found to be effective through Learning Opportunities C-2 and C-7. Various research projects and learning opportunity projects will consider a variety of methods to inform people about objectives, management actions, and what is learned. Some of the methods that will be considered are informational pamphlets, interpretive sites, self-guided trails, publications in technical documents, media releases, and use of the Klamath NF's web page on the Internet (the address for the web page is ***www.r5.fs.fed.us/klamath/mgmt/gnama/index.html***). The Forest will work with its partners for the most effective communication of adaptive management information. The partners include but are not limited to research professionals, local landowners, the Klamath PAC, local government officials, Native Americans, and forest users.

Some programs and projects that assist in communicating the AMA's messages are already underway. They are listed below:

⇨The **Siskiyou Training and Employment Program** (STEP) crew worked many hours on AMA and other projects in 1996. Their training and work skills led to employment elsewhere for the 1997 season. A new crew is currently enrolled in the Ecosystem Management Technician Training Program. This is a partnership with STEP and College of the Siskiyous, developed from a Department of Labor grant. Technical support and projects continue to be provided by the Forest Service and private landowners. Future plans include the utilization of the crew on a variety of ecosystem management projects including prescribed underburning, inventories, and habitat improvements projects. The development of contracting skills for the crew is also planned for the future. This skilled workforce is available for employment with public and private land management agencies and/or contractors.

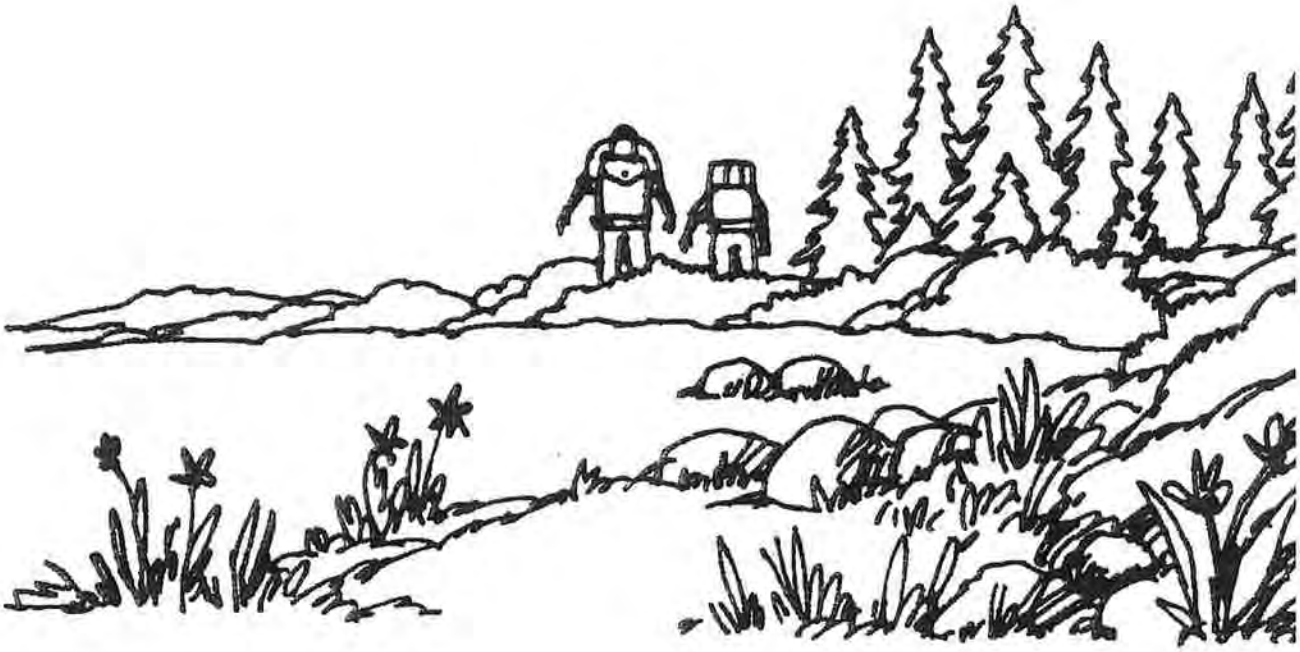
⇨The **Butte Valley Watershed Project** is coordinated by an Americorps worker, lead teachers from each local school, and resource specialists from the Goosenest Ranger District. They develop an annual project schedule for students and classes from all Butte Valley schools, kindergarten through 12th grade. Students develop science and math skills for use in a monitoring and restoration program. Students use GPS receivers to locate and map stream locations; photographic equipment to document existing conditions; and deploy the following instruments: thermographs to record long-term water temperature fluctuations, dissolved oxygen meters, conductivity meters, and McNeil sediment samplers. Students learn to identify macro-invertebrates, amphibians and local fish species. Within the AMA, studies have been focused on Butte Creek watershed, but plans have been made to include Antelope Creek watershed as well.

⇨The **Deer Habitat and Public Awareness** project will determine how best to inform and involve the public on management activities that may affect deer habitat. The Bitterbrush Study will be utilized with on-going results and activities.

Coordination of Activities

Coordination of Activities includes an informal method to coordinate with overall activities within the province to the extent of neighboring forests or forests with similar ecosystems. Currently individual resource specialists are communicating across forest boundaries with respect to NSO habitat management and mushroom utilization/harvests. A Tri-Forest Team is focusing on how to best manage the edible mushroom resource. These efforts derive from dramatic increases of mushroom permits requested in the last few years within the AMA and surrounding areas.

Refer to the Map Section for Map IV, National Forest Land Management Prescriptions Within and Adjacent to the AMA, at the end of this Guide.



Knowledge becomes wisdom only after it has been put to practical use.

Author unknown

Appendices

Appendix A Funding Strategy

This section targets foreseeable project funding problems and needs. It also describes how to generate some of the funding short-falls and/or political changes necessary to implement AMA goals and objectives. Listed below are some existing or potential funding sources from Federal agencies, alternative funding sources, volunteer programs, and private business partnerships (identified under specific **Monitoring Questions** in Appendix B).

Budget Process

Because extensive monitoring of project activities and ecosystem functioning is emphasized for AMAs, it is likely that additional funding will be necessary. This additional funding will either have to come through the Forest Service budgeting process, or through new sources that have not been identified yet. The Forest Service has said for the last decade that monitoring is part of programs and projects. There is no special money for monitoring. New sources, for example partnerships with research or corporations, will have to be requested to meet shortages or special projects. To do definitive monitoring that actually provides solid results, it often requires significant time and money. Consequently, monitoring funding will be a critical aspect of AMA management.

Consistent and adequate Forest Service funding is needed to develop contracts where feasible and prioritize areas for development of project proposals (grants). The Forest Service needs flexibility to utilize funds for matches with partnerships or grants to respond to opportunities as they arise. Currently, the Goosenest AMA is actively seeking partnerships and grants to accomplish some AMA projects and supplementing Forest Service funding.

There are four steps to achievement:
Plan purposefully,
Prepare prayerfully,
Proceed positively,
Pursue persistently.

William Arthur Ward

Appendix B
Monitoring

Background Information

Monitoring is an essential component of ecosystem management providing information on the success of implementing resource management activities. Monitoring is necessary to ensure that management actions are meeting the objectives of the Klamath National Forest Plan.

Monitoring occurs at different scales. Monitoring identifies indicators of environmental changes, formulates and tests hypotheses about cause of changes, and guides AMA management to achieve desired conditions.

There are three basic types of monitoring: **Implementation**, **Effectiveness**, and **Validation.**

Implementation Monitoring determines if specified S&Gs are being met. Are we doing what we said we would do? This is the most basic form of monitoring, often resembling a check list of compliance with plan or project guidelines. It is generally based on direct observations and measurements. A Provincial Level Review Team, comprised of interdisciplinary agency personnel and local PAC members is doing Implementation Monitoring at the NWFP regional level.

Effectiveness Monitoring determines if the results are what we had intended. Are we achieving our goals/desired condition? Effectiveness monitoring should be undertaken at a wide variety of conditions (slope, aspect, or vegetation communities) within the AMA. Identification of measurable criteria and evaluation will determine if desired conditions are being implemented. The NWFP Region is also developing an Effectiveness Monitoring process.

Validation Monitoring evaluates whether a cause and effect relationship exists between management activities and general objectives. It assesses if underlying assumptions are correct. Among the key set of assumptions that should be validated are relationships between habitat, management activities, and populations. Formal research, often replicated on a Regional scale, is required to help determine if plan assumptions are valid and if there are better ways to meet goals and objectives. For this AMA, validation scale or design needs to be on-going with other provincial eastside forests (such as the Shasta-Trinity and Modoc National Forests). Refer to the Map Section for Map IV "National Forest Land Management Prescriptions Adjacent to the AMA."

Several items are being considered for Validation Monitoring at a Regional Level for all AMAs. These items were chosen from a list of topics to be consistent with all AMAs and the NWFP. These items will provide feedback to future development of validation monitoring questions
being addressed by Regional Ecosystem Research and Monitoring Committee.

1. *Northern Spotted Owl by Physiographic Province*: --- What are the assumption(s) applied to NSO over its range and do these hold true for Goosenest AMA and its local habitat? How do we manage at the edge of the range, which is where this AMA is located? Does owl breeding success in this area fall within the range of variability used in the NWFP assumptions?

2. *Local and Economic Stability as a Result of Federal Management*: --- Do the assumptions related to economic stability used in NWFP apply to the Goosenest AMA?

3. *Effects of Public Involvement in Ecosystem Management:* -- Do the assumptions related to public involvement in the NWFP apply to the Goosenest AMA?

Appendix B Monitoring (continued)

This section describes established local monitoring activities by resource, what is included, and who implements the monitoring program. These will tie back into Klamath Forest Plan Monitoring Strategy which focuses on Management Activities not individual resources. These activities are currently 1) timber harvest, 2) range, 3) roads, 4) restoration, and 5) prescribed fire. The following will demonstrate which AMA management activities will help us with specific resource monitoring below.

The AMA Team was asked the following **monitoring questions** during the winter of 1997 by Tom Farmer, District Ranger, to help address their specific resource program needs:

Local Implemetion Monitoring Questions

- What **needs** to be monitored to show your resource or program is effective? Use quantitative objectives.
- List what you're doing now for your resource, e.g. owl banding program.
- What are your capabilities with existing staff and funding?
- List what you'd like to do and how (i.e., list opportunities; contracts, research, volunteers, partners and cooperative agencies).
- What are the number of S&Gs we're currently testing and in what FY? (i.e., CWD in eastside pine, snag longevity, and riparian reserve width.)
- What other S&Gs should we be testing? Identify manageable numbers (by FY, funding, etc.). (i.e., crown closure, bitterbrush with a fire ecosystem).

The following section contains resource specialists' responses to the above questions:

Northern Goshawks

What <u>needs</u> to be monitored to show your resource or program is effective? Use quantitative objectives.

Northern goshawks are California State Species of Concern, and Forest Service Sensitive species. Currently monitor known nest sites each year for breeding success. The USFWS has been banding birds for more than 10 years to study demographics.

List what you're doing now for your resource.

Habitat assessments, follow up on sightings, and survey suitable habitat within current and future resource projects. Checking known nest sites for activity and counting young fledged. Assist the USFWS with banding as requested.

What are your capabilities with existing staff and funding?

Currently check sites for activity and will hopefully have time to count young later.

What are your capabilities with existing staff and increased funding?

With more staff, volunteers, etc. could survey thoroughly for new sites and spend time searching for pairs that have moved. Could set up blinds to observe bands for demographic data and also observe prey species. Collection of pellets to identify further prey species. Radio-telemetry for home ranges or develop habitat use data.

List what you'd like to do and how.

Develop a GIS database of not only nest habitat, but also learn and model prey habitat to further understand goshawk needs. Also develop a more comprehensive vegetation layer with understory characteristics to analyze nest and forage habitat; this would help improve management goals for goshawks. Use information from past stand management techniques relative to goshawk nest locations and breeding success with the best current vegetation data to develop strategies for maintaining nesting home ranges by creating replacement nest stands and mosaic of foraging habitat (prey habitat) within home ranges. The above could be done with PSW and/or students needing research projects.

What are the number of S&Gs we're currently testing and in what FY?

Current nest site monitoring and surveys address S&G for Biological Diversity regarding Sensitive Species 6-8. Research that has been accomplished provides information about habitat requirements of nesting goshawks to test Wildlife S&Gs for goshawks FW 8-19 and 8-20.

What other S&Gs should we be testing?

Management of goshawk home ranges in the AMA provides the opportunity to test silvicultural treatments for maintaining these ranges that could possibly by applied to the LSR-MA5-2.

Note*:** the Klamath National Forest Plan has numbered the S&Gs for ease in identification. ***"FW" denotes Forest-wide S&Gs (for example, "FW8-20" is Forest-wide S&G, found on page 4-38 of the Klamath Forest Plan); ***"MA" denotes Management Area S&Gs*** (for example, "MA5-2" is a S&G under Management Area 5 Late-Successional Reserves, see page 4-101.

Fisheries/ Riparian Reserves

What needs to be monitored to show your resource or program is effective? Use quantitative objectives.

For watershed-level monitoring, baseline data and periodic follow-up surveys need to be established on representative sensitive stream reaches within each major watershed and sub-watershed within the AMA. Other Riparian Reserves or areas of concern need to be identified as they are encountered and monitored by collecting baseline data and repeating the established protocol at periodic intervals. Quantitative amphibian surveys need to be conducted in several key area to track population trends, this applies especially to sub-watersheds that lack fisheries resources.

List what you're doing now for your resource.

Two sensitive reaches were established on Antelope Creek in 1996 and one on Butte Creek. These reaches were surveyed using Region 5 Stream Condition Inventory (SCI). Locations for other SCI reaches have been identified, and locations within major sub-watersheds have been located for monitoring purposes. Co-operation with CDFG has helped to develop a fish stocking plan for Antelope Creek and preliminary surveys for a wild trout program designation for Antelope Creek and Butte Creek. Butte Valley Schools have become partners in water quality monitoring projects in both watersheds also. Presence/absence surveys have been conducted to locate amphibian populations and identify species for future monitoring activities.

What are your capabilities with existing staff and funding?

Very limited. High priority areas will receive bulk of attention, but even then those areas will not be well represented. Greater portions of landscape within AMA will receive little or no regular monitoring and be visited only sporadically for specific project review (timber sale areas). Information will continue to be anecdotal and sparse.

What are your capabilities with existing staff and increased funding?

A small increase in staff, which would support a seasonal field crew of 2 trained technicians, along with necessary funding to support a vehicle for them, would make a serious monitoring program possible. An efficient program could be established that would include: watershed-level monitoring of the entire AMA, amphibian monitoring of areas that do not contain fisheries, and development of adaptive management projects for riparian areas.

List what you'd like to do and how.

- Establish 2 more stream condition inventory (SCI) reaches and approximately 20 permanent transect sites within the AMA by using Larry Alexander's STEP crew or similar crew with Job-In-The-Woods funding.

- Conduct amphibian surveys in upper Butte watershed using local volunteers and school groups Science, Environment and Math Studies.

- Establish working co-operatives with industrial land-owners within the AMA to address road network and cumulative impacts to water quality and aquatic habitat.

- Establish partnerships with small landowners for watershed management and education.

- Conduct amphibian population and trend surveys using volunteers, local school students and teachers.

- Design replicated studies of riparian treatments within several channel and vegetation types. This level of management would require development of a more stable base program and the use of partnerships and/or volunteers.

Note: the Klamath National Forest Plan has numbered the S&Gs for ease in identification. ***"FW" denotes Forest-wide S&Gs*** (for example, "FW23-15" is Forest-wide S&G, found on page 4-66 of the Klamath Forest Plan); ***"MA" denotes Management Area S&Gs*** (for example, "MA10-73" is a S&G under Management Area 10 Range Management, see page 4-144.

What are the number of S&Gs we're currently testing and in what FY?

Ongoing monitoring of grazing management by percent utilization and stubble height in riparian areas (FW23-15).

What other S&Gs should we be testing, identify manageable numbers?

MA10-73, MA10-76, MA10-77, MA10-1, MA10-16, MA10-43, MA10-48, MA10-52, MA10-63.

Northern Spotted Owl Habitat

What needs to be monitored to show your resource or program is effective? Use quantitative objectives.

Monitoring population dynamics relative to habitat distribution and reserve design. Monitor movements and gene flow through the California Cascades through range of California spotted owl. Shasta-Trinity northern spotted owls are important to study but have never been included due to lack of funding. Need more surveys and banding to include Shasta-Trinity. Monitor reproduction success, site and mate fidelity and dispersal of young (recapture of banded young at different territories). This data has proven useful during consultation process with USFWS. The detection/observation data has helped delineate biological home ranges compared to 1.3 mile home range boundaries developed by owl data in Washington/Oregon Cascades and Klamath Province.

List what you're doing now for your resource.

Threatened and sensitive species monitoring (northern goshawks, northern spotted owls, bald eagles). This includes known territories, reported sitings, and project related surveys. Long-term research with northern goshawks has initated many graduate student studies and partnerships with universities.

What are your capabilities with existing staff and funding?

Capable of monitoring known sites for Threatened and Sensitive species but with limited funding now and in future it will be increasingly difficult to monitor all known sites. Future in partnerships and grant writing.

What are your capabilities with existing staff and increased funding?

It would be advantageous to have a wildlife crew of one GS-4 or 5 plus two volunteers to do monitoring. More financial support could expand the Goosenest AMA owl monitoring to the Shasta-Trinity National Forests.

List what you'd like to do and how.

Include the Shasta-Trinity National Forests in owl monitoring. Start bat research (initially inventory and species identification and habitat relationships). More partnerships with universities and with USFWS. Explore future funding possibilities with known wildlife organizations (Duck's Unlimited, Rocky Mountain Elk Foundation, and Point Reyes Bird Observatory).

What are the number of S&Gs we're currently testing and in what FY?

Above mentioned examples are not being tested scientifically. We do implementation monitoring in relation to CWM standards and guidelines but do not do effectiveness monitoring.

What other S&Gs should we be testing, identify manageable numbers (by FY, funding, etc.)?

Bitterbrush manipulation, mountain mahogany manipulation, snags, crown closure (in relation to owl dispersal habitat), pile monitoring (for marten).

Coarse Woody Material and Snags

What needs to be monitored to show your resource or program is effective? Use quantitative objectives.

Pre- and post-treatment snag and log levels. Treatments are both timber harvest and prescribed burning. Monitoring should include not only densities and size of snags and logs, but also decay class. Snag dependent wildlife species populations relative to snag presence to test effectiveness of snag retention guidelines.

List what you're doing now for your resource.

Currently completing pre-harvest inventory for snags and logs to varying levels of effort and methodology. No formal or informal pre- or post-burning surveys are conducted for snags and logs. Follow S&Gs for snag retention in project areas, and set aside green tree replacement snags, but not doing effectiveness monitoring.

What are your capabilities with existing staff and funding?

Same as above.

What are your capabilities with existing staff and increased funding?

With more financial support, more intensive and extensive survey and monitoring for snags and logs could be conducted. One wildlife crewperson GS-4 or 5 plus two volunteers to inventory by conducting surveys for nest cavities and snag dependent species sighting throughout past and proposed project areas and existing suitable habitat. Any locations could then be monitored from year to year for occupancy.

Note: the Klamath National Forest Plan has numbered the S&Gs for ease in identification. ***"FW" denotes Forest-wide S&Gs*** (for example, "FW8-22" is Forest-wide S&G, found on page 4-39 of the Klamath Forest Plan); ***"MA" denotes Management Area S&Gs*** (for example, "MA5-30(3)" is a S&G under Management Area 5 Vegetation Management, see page 4-104.

List what you'd like to do and how.

Do pre- and post-burning inventories of snags and logs to evaluate what amount of logs and snags survive prescribed burning. Opportunity to do this in Little Horse Peak Research plots that have prescribed fire.

Conduct surveys to inventory existing nest cavities in snags and what species are using them. Use low-level flight video to locate areas with high snag concentrations to stratify survey intensity. Gather vegetative data about the sites that are occupied versus those that are not (or randomly selected sites), especially detailed descriptions of existing snags and stand conditions. This would provide more information that could be used to effectively determine snag retention and replacement in management activities. This would need to be done with wildlife field crews and cooperation with researchers for survey and data collection protocols. Such surveys could be used to verify the forest plan habitat capability model and provide information about the quality of existing habitat. Monitor known nest cavities from year to year for occupancy and reproductive success. Explore funding sources and interest of wildlife organizations. Some KV funds are available for this type of project but may need to be supplemented to cover all that is proposed here.

What are the number of S&Gs we're currently testing and in what FY?

FW 8-22, 8-23, 8-24, 8-25, 8-28, 8-30 - no effectiveness monitoring is done which applies to the next question.

What other S&Gs should we be testing, identify manageable numbers?

MA5-2, MA5-30(3.) District snag and CWM S&Gs should be finalized, which means monitoring implementation and effectiveness of interim standards.

Range Resource

What needs to be monitored to show your resource or program is effective? Use quantitative objectives.

Forage utilization levels in meadows and riparian systems, including shrub and aspen utilization. These habitat types are limited in extent on the District, and provide important habitat for many wildlife species, including threatened and sensitive species.

Need to survey for grass/grasslike species as primary dry/moist/wet meadows and as understory vegetation components. Place additional utilization cages through out a variety of vegetation communities. In conjunction with botanist complete vegetation mapping of understory plant species. Need to monitor effects of burning (fall and spring) on soils and various understory forage species. May wish to use less burning, in some areas or soil types and try more crushing of timber related slash instead.

List what you're doing now for your resource.

Developing water sources and installing unit fences. The District has placed utilization cages to build a data base on grass production, species make-up and utilization of areas. The utilization cages help determine if an area is being grazed, and if beneficial to assist in improving livestock distribution. A majority of the AMA is classified as secondary or transitory range. Utilization studies have been conducted on the AMA, off and on since the 1980s. Cages in those areas classified as Winter Range in the Klamath Forest Plan, have been set out to monitor browsing on bitterbrush.

Condition and Trend Plots have been monitored since 1957. These have mostly been located in meadow areas, but a few exist in eastside pine communities. Through the use of Annual Operating Instructions and meeting with permittees through out the grazing season we have been working to change grazing distribution patterns, salting locations and looking to extend or develop additional water to assist livestock and wildlife.

Note: the Klamath National Forest Plan has numbered the S&Gs for ease in identification. ***"FW" denotes Forest-wide S&Gs*** (for example, "FW 23-10" is Forest-wide S&G, found on page 4-66 of the Klamath Forest Plan).

What are your capabilities with existing staff and funding?

The range staff have been instructing grazing permittees to conduct their own grazing monitoring. The range staff is still required to monitor utilization, livestock distribution, fence maintenance and check to see if the Annual Operating Instructions being followed.

What are your capabilities with existing staff and increased funding?

Possibly more. Might be able to hire individual to work with California Department of Corrections Crews to finish cleaning up old barb wire and page wire fences from forest lands, which would free up range technician to assist permittees in monitoring livestock utilization and distribution throughout plant communities.

List what you'd like to do and how.

Ride all allotments within the AMA to better understand plant community types, how terrain (such as lava outcrops) effects livestock and wild horse distribution, effectiveness of allotment unit fences, water and salt locations, and role the roads play in animal movements. Would also like to work more closely with the Fuels Staff to develop better monitoring of bitterbrush burning.

What are the number of S&Gs we're currently testing and in what FY?

FW 23-10, 23-11, 23-17. On going, the following are just a few of the S&Gs being followed; staff are continuing to map existing range improvements, like stock ponds, fences and pipelines. Annual Operating Instructions are done on a yearly basis.

Deer, Elk, and Pronghorn Habitat

What needs to be monitored to show your resource or program is effective? Use quantitative objectives.

Need to work with CDFG on monitoring deer and elk and pronghorn herd sizes and habitat use. This would provide needed information to determine the habitat requirements of these animals and what vegetation management is necessary to maintain what they need.

List what you're doing now for your resource.

Currently updating and improving vegetation maps that will provide information about the distribution and quantity of existing suitable habitat.

What are your capabilities with existing staff and funding?

The staff relies on casual field observation and historic sitings of habitat use and annual aerial survey information by CDFG for population size and demography. The staff has spent months working on vegetation mapping and trying to find efficient ways of doing so and rely heavily on remote sensing data (aerial photos, digital orthophoto quads and satellite imagery) to do the mapping. Time has been spent in the field making corrections to general vegetation types, but there is still much to be done. Considering modeling shrub locations using soils, precipitation, historic fire locations and the managed stand layer being developed with GIS.

What are your capabilities with existing staff and increased funding?

The mapping effort could be improved to be more detailed and enable assessment of the condition (quality) of existing habitat elements. This would require a crew of a biological technician and volunteers visiting sites stratified by the confidence in the accuracy of existing maps and compiling data from rangeland monitoring and ecodata plots to determine existing condition. It would also be advantageous to have a crew of wildlife volunteers monitor habitat use by deer using pellet count methods and visual observations of the animals.

Note*: *"FW" denotes Forest-wide S&Gs (for example, "FW 8-47" is Forest-wide S&G, found on page 4-42 of the Klamath Forest Plan); ***"MA" denotes Management Area S&Gs*** (for example, "MA5-14-2" is a S&G under Management Area 14 Winter Range, see page 4-164.

List what you'd like to do and how.

Improve the mapping effort to have detailed data to assess existing habitat distribution and condition. Conduct intensive surveys (ideally aerial) to gather information about habitat use by the herds and more information about the size and demography. Currently little information exists on the elk herds. Conduct studies using radio collars to gather information about migration routes and habitat use of elk. Use complete surveys to understand the relationship between habitat use of deer, elk, pronghorn, range cattle and wild horses to verify habitat requirements. Stratify vegetation communities to maintain or create suitable habitat to increase or sustain existing populations. Work with PSW and CDFG on study design, explore funding opportunities through grants, and develop partnerships with wildlife organizations and universities.

What are the number of S&Gs we're currently testing and in what FY?

FW 8-47, 8-48, 8-50, 8-54, MA14-1, MA14-3, MA14-5, MA14-13, MA14-23, MA16-1, MA16-5 MA16-13, MA16-18, MA16-23.

What other S&Gs should we be testing?

8-49, 8,51, 8-52, 8-53, 8-55, MA14-2, MA14-4, MA14-21, MA14-22, MA16-2, MA16-3, MA16-4, MA16-14, MA16-15, MA16-20, MA16-22, MA16-24.

Appendix C Socio-economic Strategy

AMA programs focus on linking ecosystem management and public participation with community development and economic sustainability. Coordination with local the Resource Development and Conservation District, with the Klamath Provincial Advisory Committee AMA Subcommittee, non-profit organizations, and others is helping to identify local community opportunities, alternative forest products or viable enterprises which will contribute to economic stability by providing local resource jobs and by supplementing the timber sale program with additional resource products. A variety of approaches have been used to address socio-economic concerns.

A Social Assessment completed for the local area included a nine county area around the AMA *(Well-being Assessment of Communities in the Klamath Region*, J.Kusel, October 20, 1997). This study identified community boundaries and each community's capacity to respond to a changing economic environment. Most local communities around the AMA have completed Community Action Plans which provide a step-by-step program to help people visualize what they would like their community to be in the future and develop strategies to work towards that "vision". (See Community Strategy, page 22.)

The Goosenest AMA continues to sustain a stable supply of commercial and pre-commercial forest products, mostly derived from thinnings. Direct and indirect employment generated by harvest of sawlog products has declined since the late 1980s in the seven county area within the primary sphere of socio-economic influence of the Forest. National Forest management on the Goosenest Ranger District affects the local economy in several ways:

- A portion of the budget is transferred to the local economy in the form of salaries and purchases.
- National Forest outputs stimulate private sector firm and individual spending, generating Forest revenues and changes in numbers of jobs.
- Receipts and yield taxes to Siskiyou County.

The following charts display information concerning the Goosenest Ranger District. Chart 1 shows the District's budget allocation from 1985 to 1997. Chart 2 shows the timber outputs in MMBF from 1972 to 1996. These figures include the entire District acreage (these figures included the areas now designated as the AMA and LSR).

Chart 1 - Budget Allocation

From 1985 to 1997

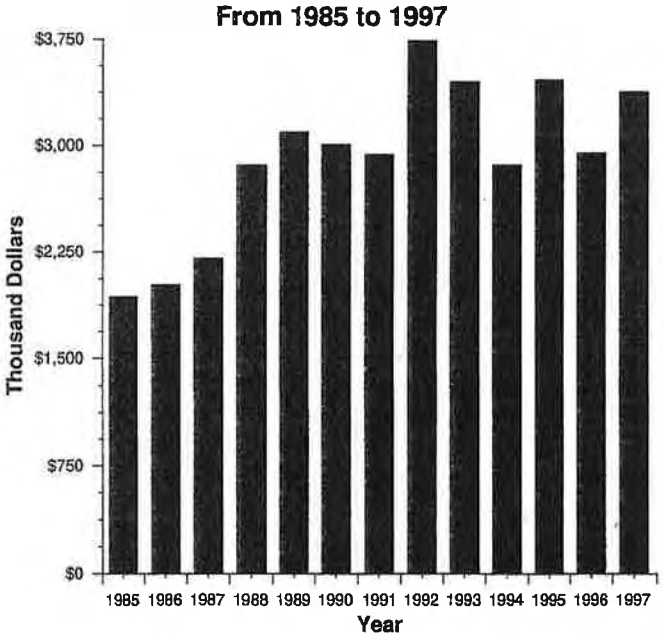
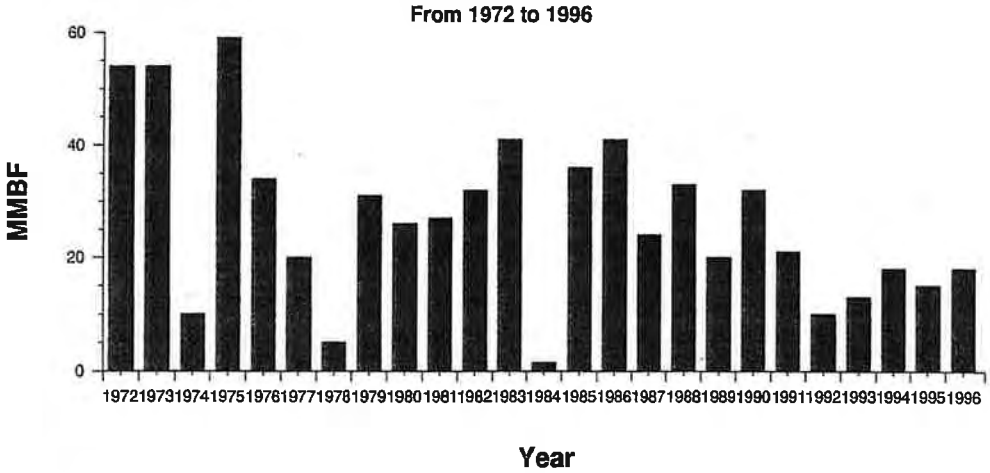


Chart 1 amounts include: salaries, rent, utilities, vehicles, contracts and project dollars. This annual budget includes grants, cooperatives with the State, national foundations, and Congressional allocations. While total allocations increase, reductions in specific project areas continue to decrease such as timber funding which depends on projected outputs (in MBF). Over the years, allocations are different because cooperatives change, resource emphasis increase in another project area, or trust funds diminish for one reason or another. One reason why outputs are down and budgets have increased is that current plan implementation and constraints cost more per acre and MBF than in the past. It simply costs more to do ecosystem management and some outputs can't be measured yet.

Chart 2 - Timber Outputs
From 1972 to 1996



Appendix C Socio-economic Strategy (continued)

Timber harvest, grazing, special use permits, recreation, and harvest of non-timber forest products all generate receipts. At the present time, timber harvest is the dominant source of receipts to Siskiyou County. Geo-thermal leases are prospects for future generation of income. Winter recreation snowmobiling has been on the increase, as well as the harvest of non-timber forest products, especially the Matsutake mushroom.

The District is using different techniques to improve timber sale economics on thinnings by reducing marking and cruising costs. These techniques include use of "Designation by Description" instead of manually marking the trees to be harvested (the trees to be cut are described in writing in the contract. Trees not meeting the description are not harvested). Another technique includes selling timber by weight rather than by manually measuring (scaling) the volume of individual logs transported from the sale area. This method provides a 75% savings over the traditional scaling method. Lowering sale costs increases revenues and contributes to a sustainable program.

The Goosenest Ranger District has been a Forest leader in providing small sales for small entrepreneurs and Special Salvage Timber Sale (SSTS) for companies with less than 25 employees. The AMA will be targeting small sales for local labor markets and exploring opportunities to develop new markets and encouraging the use of a wide variety of ground-sensitive equipment.

Other techniques include commercial fuelwood sales to local woodcutters of juniper to facilitate conversion of areas back to pine, native grass, or bitterbrush stands for restoration of pine ecosystems. Another opportunity being explored is using juniper for value-added products. Studies are on-going in southern and eastern Oregon on neighboring National Forests and private land, for feasibility, economics, and market outlets.

Product diversification has improved with an increasing biomass program for fuels reduction and increased air quality. A Biomass Task Force is comprised of a KPAC member, County Supervisor, Mayor of Dorris, ORE-CAL RC&D, Forest Service, Air Quality Resources Board, California Integrated Waste Management Board, and Pacific Power Corporation. Their task is to determine needs to complete a feasibility study on non-traditional uses of forest thinning residues, such as electrical power generation.

Currently, the KPAC has an AMA Subcommittee committed to supporting efforts to utilize a new timber sale contract to sell processed logs to buyers instead of traditional timber sales that sell standing timber. Another item of interest for the KPAC is stewardship contracts that explore opportunities to do multi-task and multi-year contracts with ecosystem management emphasis.

The following tables demonstrate locations of timber products processed from the AMA since 1994. Processing locations may provide a link to the number and type of jobs being maintained by these outputs.

Current Volume Processed from the AMA

An analysis of the products processed from the AMA is demonstrated below in Table 3. These timber sales were processed at a variety of locations in Siskiyou, Jackson, and Klamath Counties and one location in Shasta County.

As of March 1998, 8,617 thousand board feet (MBF) (49%) has been processed in southern Oregon and 8,958 MBF (51%) was processed in northern California.

Table 3. Timber Processed from Goosenest AMA.

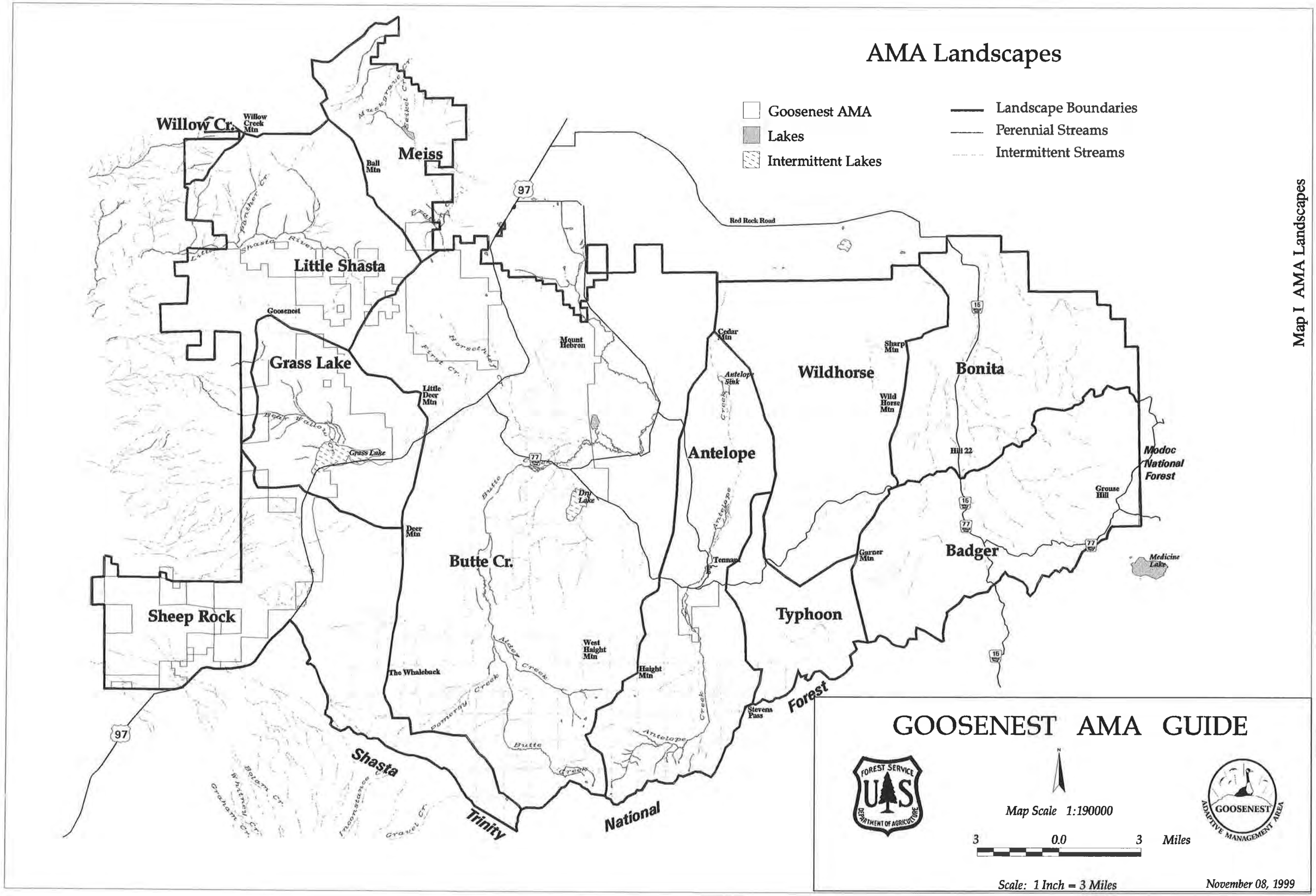
Sale Name/Year Sold	Purchaser	Volume (MBF)	Processed At
Rainbow Thin/1994	Boise Cascade	2,650	Boise Cascade Medford/White City, OR
Davis YG/1994	Columbia Plywood	3,524	Columbia Plywood Klamath Falls, OR
Goose YG/1995	Sierra Pacific Industries	2,303	Sierra Pacific Industries Anderson, CA
Tamarack YG I.S./1995	Stone Container	533	Stone Container White City, OR
Wendy SSTS/1995	W.J. Cummings Logging	151	Roseburg Lumber Weed, CA
Baird Blowdown/Insect/ 1996	Columbia Plywood	770	Columbia Plywood Klamath Falls, OR
Basin Heli/1996	Siller Brothers, Inc.	582	Sound Stud Anderson, CA
Davis Blowdown SSTS/ 1996	Darrah Logging	161	Roseburg Lumber Weed, CA
Devils/1996	Scott Timber Company	824	Roseburg Lumber Weed, CA
First Insect/1996	Columbia Plywood	384	Columbia Plywood Klamath Falls, OR
Little Deer Heli I.S./1996	Timber Products	644	Timber Products Yreka, CA
N. Garner Insect Salvage/ 1996	Columbia Plywood	509	Columbia Plywood Klamath Falls, OR
Rock Spring YG SSTS/ 1996	John Semple	113	Columbia Plywood Klamath Falls, OR
West Haight SSTS/1996	W.J. Cummings Logging	174	Roseburg Lumber Weed, CA
Deer East YG/1997	Scott Timber	4,074	Roseburg Lumber Weed, CA
Kel-Del Blowdown SSTS/ 1997	HTL William Hartman	45	Roseburg Lumber Weed, CA
Mesa Blowdown SSTS/ 1997	Bewley Investments	26	Burrill Lumber White City, OR

Clean Chip or Biomass Sales are usually thinnings of sub-merchantable trees, i.e. plantations. Trees from plantations are too small to be used for sawlogs for lumber production. Clean chips can be used for particle or press board and sometimes for paper if its free of dirt and bark. The multiple destinations of these products demonstrates the volatility of the market conditions. In other words the chips were going weekly to whoever was paying the best price per ton. Chips or Biomass continues to be a large percentage of the District's program, but most have been outside the AMA boundaries to date. Table 4 displays the chip or biomass products sold within the AMA to date.

Table 4. Clean Chip or Biomass Products Sold Within the Goosenest AMA to Date.

Sale Name/ Year Sold	Purchaser	Amount	Processed At
Temple Rock /1993	Newman and Crebbin	7,125 tons/ 1,425 MBF	Weyerhauser Klamath Falls, OR
Temple Rock II/1994	Circle De Lumber	5,395 tons / 1,079 MBF	Sierra Pacific Industries Anderson, CA and Weyerhauser Klamath Falls, OR
Temple Rock III/1994	Circle De Lumber	3,840 tons / 768 MBF	Sierra Pacific Industries Anderson, CA and Weyerhauser Klamath Falls, OR
4 Corners/1994	R & B Logging	1,750 tons / 350 MBF	Roseburg Lumber Weed, CA
Little Shasta/1995	Circle De Lumber	1,552 tons / 310 MBF	Sierra Pacific Industries Anderson, CA and Weyerhauser Klamath Falls, OR
Snow Park /1998	Franklin Logging	10,980 tons / 2,196 MBF	Simpson Lumber Eureka, CA

Note: The conversion rate is each 25 tons equals 5 MBF. Clean chips went to the above locations and is the primary data used in the table because market conditions were favorable for that product. If the product was used for biomass, it likely went to Shasta Wheel-a-brator in Anderson as hogfuel for the co-generation plant.



Map I AMA Landscapes

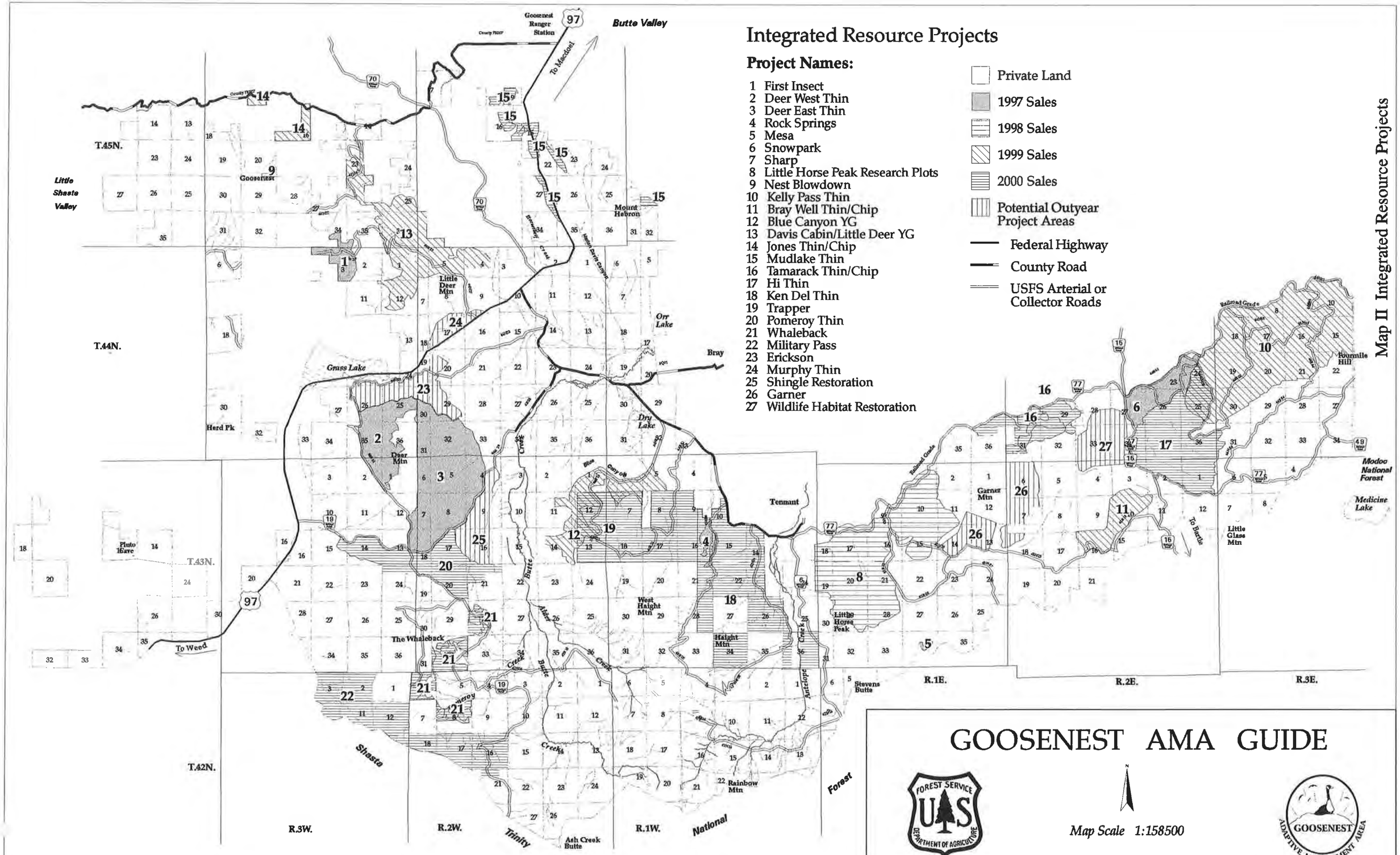
Integrated Resource Projects

Project Names:

1 First Insect
2 Deer West Thin
3 Deer East Thin
4 Rock Springs
5 Mesa
6 Snowpark
7 Sharp
8 Little Horse Peak Research Plots
9 Nest Blowdown
10 Kelly Pass Thin
11 Bray Well Thin/Chip
12 Blue Canyon YG
13 Davis Cabin/Little Deer YG
14 Jones Thin/Chip
15 Mudlake Thin
16 Tamarack Thin/Chip
17 Hi Thin
18 Ken Del Thin
19 Trapper
20 Pomeroy Thin
21 Whaleback
22 Military Pass
23 Erickson
24 Murphy Thin
25 Shingle Restoration
26 Garner
27 Wildlife Habitat Restoration

Private Land
1997 Sales
1998 Sales
1999 Sales
2000 Sales
Potential Outyear Project Areas
Federal Highway
County Road
USFS Arterial or Collector Roads

Map II Integrated Resource Projects



GOOSENEST AMA GUIDE

FOREST SERVICE U S DEPARTMENT OF AGRICULTURE

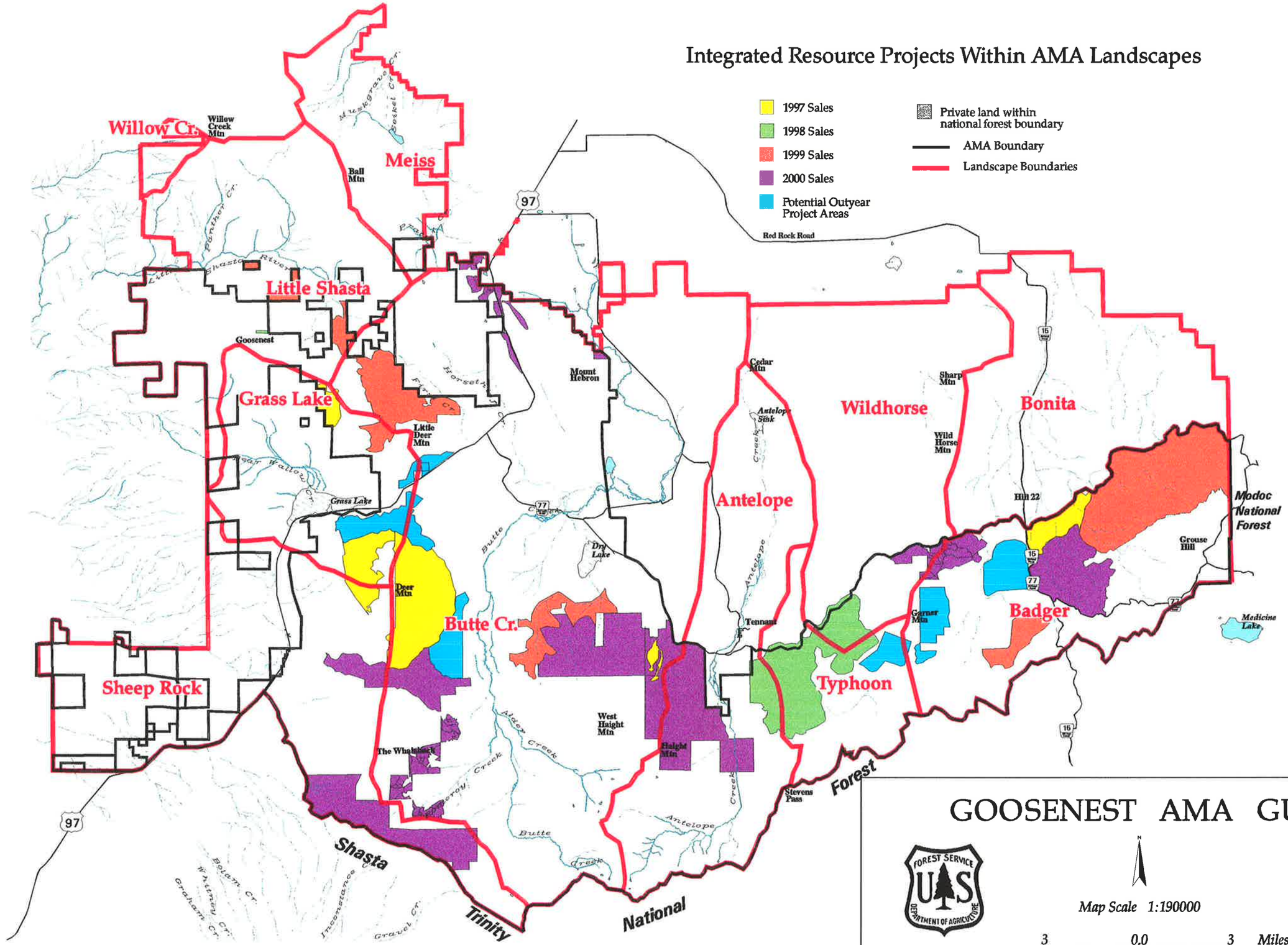
Map Scale 1:158500

2.5 0.0 2.5 Miles

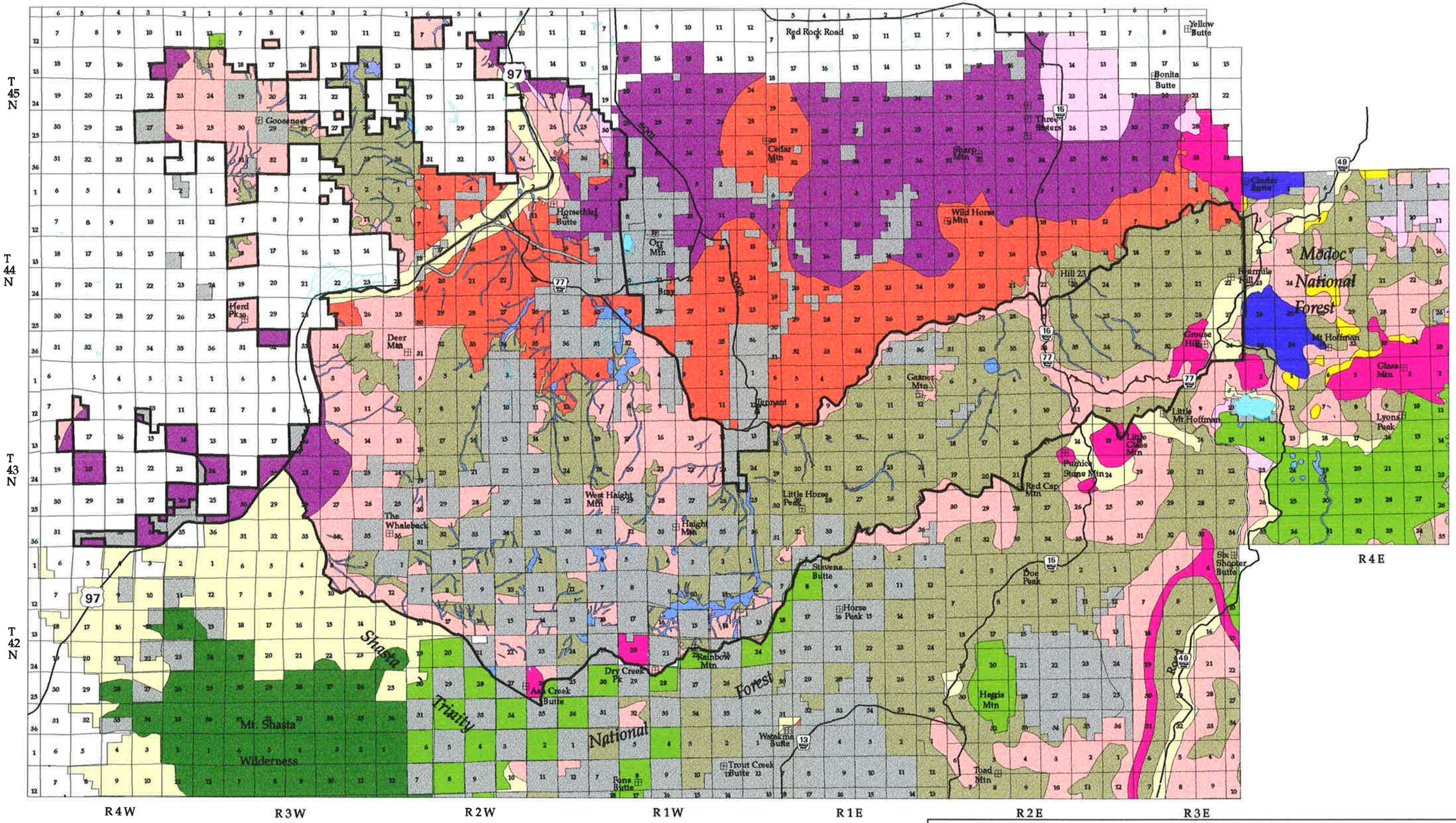
GOOSENEST ADAPTIVE MANAGEMENT AREA

Scale: 1 Inch = 2.5 Miles

November 08, 1999



Map III Integrated Resource Projects Within AMA Landscapes



National Forest Land Management Prescriptions Within and Adjacent to the AMA

AMA Boundary

Private lands within national forest boundary

CONGRESSIONALLY DESIGNATED:

Congressionally Designated

Late Successional Reserves and Managed Late Successional Areas

ADMINISTRATIVELY WITHDRAWN:

Threatened and Endangered Wildlife

Special Management

Backcountry

Mapped Riparian Reserves

Winter Range

MATRIX:

Rangeland

Forage

Retention (Visual Quality Objectives)

Partial Retention (Visual Quality Objectives)

General Forest

GOOSENEST AMA GUIDE

FOREST SERVICE U S DEPARTMENT OF AGRICULTURE

N

Map Scale 1:200000

3.16 0.0 3.16 Miles

GOOSENEST ADAPTIVE MANAGEMENT AREA

Scale: 1 Inch = 3.16 Miles

November 08, 1999

Map IV National Forest Land Management Prescriptions Within and Adjacent to the AMA