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July 2008

Forest Plan Revision Resource Evaluations

Apache-Sitgreaves National Forests

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Forest Plan Revision
Resource Evaluations

Apache-Sitgreaves National Forests

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Introduction

This document provides detailed information about the individual resource and program areas outlined in the Apache-Sitgreaves National Forests' 1987 forest plan. The objective of each section is to describe the current conditions and trends, how well the forest plan is working, and what needs to change. This information, along with public input and the social, economic and ecological sustainability reports will be used to determine what needs to be revised in the 1987 forest plan and will be documented in the Comprehensive Evaluation Report.

In addition to the need for change identified throughout this document, there are several administrative need for change, including:

- Correct and update data, maps, typographical errors, and other non-substantive changes;
- Update management projections of outputs (timber, etc);
- Update and/or change the monitoring program;
- Remove plan language that repeats direction already in laws, regulation, or policy. Update direction, as needed, to reflect changes in laws, regulation, or policy;
- Reformat into the new plan model (vision, strategy, design criteria) and design to be more user-friendly;
- Utilize geographic areas to provide more focused plan direction. The figure on the right depicts the eight geographic areas delineated based on distinct social, economic, and ecological attributes.

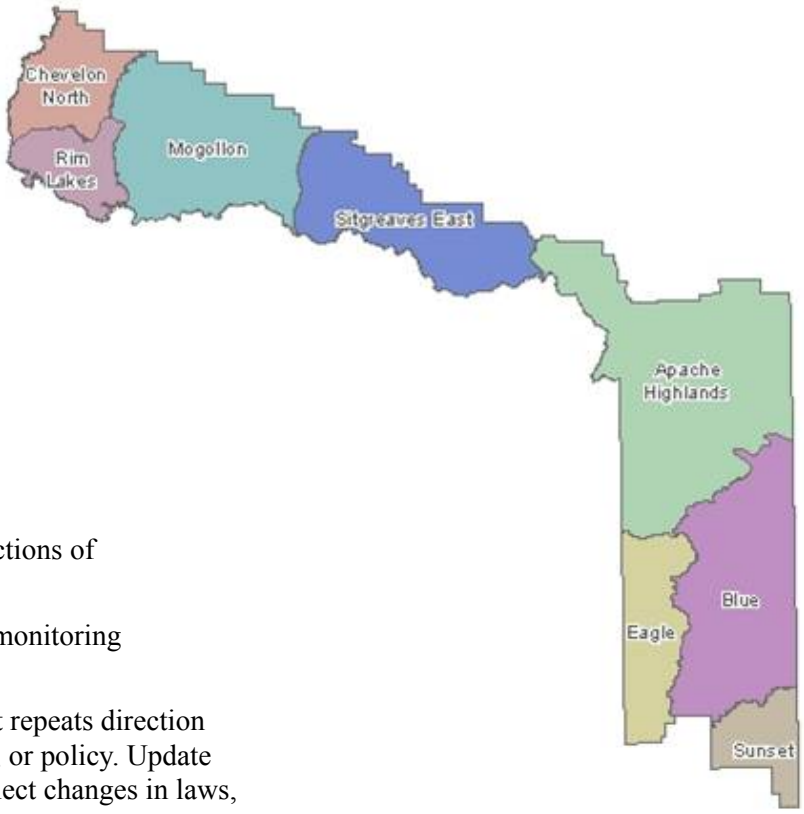

Figure 1. Map showing the geographic areas of the ASNFs

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Organizational Structure of the Evaluations

Each evaluation is organized according to the structure below.

1987 Forest Plan Desired Conditions (Goals and Objectives)
The goals and objectives from the 1987 forest plan are listed within this box.

Current Conditions and Trends – discussion of current conditions, highlighting important trends that have influenced whether the desired conditions were achieved or may influence the ability to continue working toward the 1987 forest plan desired conditions.

Status of 1987 Forest Plan – discussion of the progress made toward the desired conditions and the contributions and/or risks to the sustainability of ecological, economic, and social systems.

Forest Plan Need for Change – lists the need(s) to modify 1987 forest plan components based on this evaluation. These include broad need for change issues as well as potential solutions for change.

Other Need for Change – this section may list site-specific, implementation or procedural needs for change. These changes are generally outside the scope of forest plan revision.

Administration

1987 Forest Plan Desired Conditions (Goals and Objectives)

General Administration and Human Resources
Provide a line and staff organization and administrative support needed to ensure responsive and efficient public land management.

Manage human resource programs to provide employment, employee well-being, and economic opportunities to communities while meeting natural resource goals.

Facilities
Provide administrative facilities to meet resource and activity needs and that meet Federal and State pollution abatement standards where applicable.

Implement a long-range building betterment program and, when needed, plan new construction.

Develop a long-range water and sewage system betterment program.

Land Management Planning
Provide coordination and ensure interdisciplinary input for implementing, monitoring, and updating the forest plan.

Public Involvement
Provide and promote public participation concerning forest management to both internal and external publics. Appropriately involve the public in the decision-making process. Seek advice and counsel from people who are affected by forest management.

Current Conditions and Trends

General Administration and Human Resources

The Apache-Sitgreaves National Forests (ASNFs) are managed by six administrative offices. The ASNFs' headquarters is the Supervisor's Office in Springerville, Arizona. In 2000, the Chevelon and Heber Ranger Districts consolidated into the Black Mesa Ranger District. The forests now have five ranger district offices that oversee on-the-ground management:

Alpine Ranger District – Alpine, Arizona
Black Mesa Ranger District – Overgaard, Arizona
Clifton Ranger District – Clifton, Arizona
Lakeside Ranger District – Pinetop-Lakeside, Arizona
Springerville Ranger District – Springerville, Arizona

The ASNFs employ approximately 300 full-time employees. Forest personnel figures increase with seasonal temporary hires (fire fighters, recreation technicians) during the spring and summer months. The forests also rely on volunteers.

The ASNFs continue to emphasize civil rights and ethics/conduct through regular awareness and training sessions. The forests offer a wellness program, as well as access to an employee assistance program.

Nationwide, there has been an emphasis on improving services and cutting costs to the taxpayer. In 2001, the Office of Management and Budget required 26 civilian agencies to conduct competitions to comply with the Competitive Sourcing Initiative. Competitive sourcing is based on the theory that public/private competitions ensure that services provided to the Federal Government—by government employees, the private sector or a reimbursable agreement with another government entity—will be the most cost-efficient and effective services possible.

The Forest Service, U.S. Department of Agriculture, has made several changes to improve efficiencies including consolidation of computer help desk activities and centralization of human resources, budget, and finance operations in the Albuquerque Service Center. In some cases, these changes have led to skilled employees transferring out of the local community, thereby affecting the local social and economic systems.

The forests' budget allocation has fluctuated from approximately $14 million in fiscal year 1987 to $23 ($17)[1] million in 1996 to $33 ($19) million in 2006. The figure below shows the budget distribution across program areas for fiscal years 1987, 1996, and 2006.

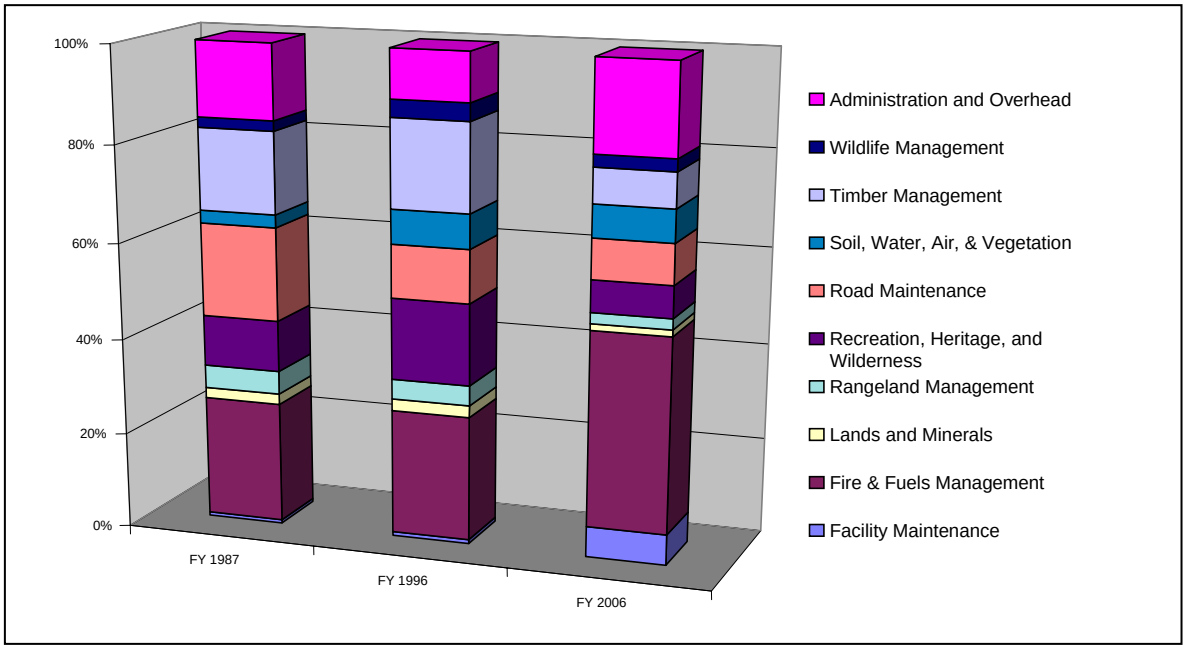


Figure 2. Percent budget allocation by program areas for the ASNFs

[1] Amounts in parenthesis are adjusted for inflation and represent the forests' budget allocation in 1987 dollars.

Facilities

The ASNFs' facilities are aging and, therefore, deferred maintenance costs continue to increase. Of the five ranger districts, two occupy relatively new office buildings. The other three districts are in older facilities. In two cases, the ranger stations do not meet current needs. The forests have overcome some facility needs by procuring modular offices and quarters to supplement or replace inadequate facilities. However, less than ten modern modular buildings are used on the forests.

Fire facilities, such as lookout towers, are aging but are maintained so they remain safe and functional. However, there is a need to comprehensively look into which towers to replace and which ones to abandon. As of April 2007, deferred maintenance needs for fire and administrative buildings exceeded $900,000.

Water and waste water systems are also aging. The ASNFs closed many small spring-fed water systems between 2000 and 2001. For the remaining systems, new wells have been drilled and well components have been replaced. Waste water systems, which are relatively simple systems, are still problematic. Aging waste water collection lines and sewage lagoons will require greater capital investment to improve, repair, and expand them or the forests may be faced with closures.

In 1994 the ASNFs evaluated all recreational and administrative facilities for compliance with the Architectural Barriers Act of 1968. The completed survey determined what architectural barriers existed, while the transition plan describes solutions to those barriers. The forests continue to ensure that accessibility needs are met when facilities are upgraded or developed.

Land Management Planning

The ASNFs' organization includes a planning team that is responsible for coordinating the maintenance and monitoring of the forest plan. The Supervisor's Office staff takes a lead role in ensuring that project level implementation activities are consistent with the forest plan.

Forest Service Manual (FSM 1921.04b and FSM 1921.4) requires each forest to implement, monitor, and update the forest plan. The 1987 forest plan has been amended, or updated, 13 times. The forests compile an annual monitoring report.

Public Involvement

The population centers across the ASNFs are growing and include year-round residents, summer home occupants, and visitors. These three distinct populations or publics require a variety of methods to connect the forests and their users. The public is continually invited to participate in planning processes for all major projects, usually during the NEPA process. Active dialogue between the public and the agency is encouraged through a variety of media, including the ASNFs' web page, newspaper, radio, mail, and public meetings.

Collaborative efforts have resulted in the formation of many partnerships; that trend will continue. In particular, groups such as the Natural Resources Working Group, the Arizona Sustainable Forest Partnership, the White Mountain Stewardship Monitoring Board, the Eastern Arizona Counties Resource Advisory Committee, and the Little Colorado River Weed Management Area have contributed greatly to the decision-making process and desired outcomes on the forests. Other partners have contributed time and financial resources toward achieving a shared vision and accomplishing specific goals. The ASNFs work closely with the county

governments in Greenlee, Apache, Coconino, and Navajo Counties, with local governments, and with State and other Federal agencies. This dialogue occurs in both formal and informal settings.

The ASNFs continue to build relationships with 10 Native American tribes. Tribal interests and needs are recognized in planning efforts.

Status of 1987 Forest Plan

General Administration and Human Resources

Achieving the desired condition is influenced by fluctuations in the ASNFs' budget, staffing, and management priorities. The desired condition is still appropriate.

Facilities

The desired condition is still valid, however, the existing administrative facilities are not entirely adequate for the forests needs; many are in an economically unsustainable condition. Environmentally, the ASNFs face challenges with lead-based paint in older buildings; this is dealt with on an as-needed basis. Operating water and waste water systems are in compliance with standards and do not pose threats to public health, safety, or the environment. The forests need to further refine its long-term facility master plan, identify economically unsustainable facilities, and replace them with new ones.

Land Management Planning

The desired condition is still valid.

Though monitoring is an integral part of forest and project planning, it has not been adequately funded or supported. Overall, the forest plan monitoring plan has not been adequately implemented.

Public Involvement

The desired condition is still appropriate. Those goals are quite general and are being implemented at all units.

Forest Plan Need for Change

No need for change has been identified.

Other Need for Change

- Refine the ASNFs long-term facility master plan, identify economically unsustainable facilities, and replace them with new ones.
- There is always room for improvement in communicating with the public. In particular, it is difficult to contact second homeowners and visitors when they are not physically present in or near the forests. Most forest visitors reside in the Phoenix or Tucson metropolitan areas and come to the forests on short duration trips.
- Most local residents do not communicate with the forests until an action or project plan directly affects them. Some local residents do follow Agency actions in the local media,

but it usually requires more personal contact techniques to communicate effectively with people. Collaboration and partnerships, as tools for planning and achieving forest plan goals, will extend beyond plan revision into the implementation phase.

Air Quality

1987 Forest Plan Desired Conditions (Goals and Objectives)
Protect the current status of air quality values (AQRVs) in the Mt. Baldy Class I airshed and in other wilderness areas.

Conditions, trends, and need to change are identified in the Ecological Sustainability Report and the Comprehensive Evaluation Report.

American Indian Rights and Interests

1987 Forest Plan Desired Conditions (Goals and Objectives)
There are no specific goals and objectives related to American Indian Rights and Interests.

Current Conditions and Trends

The Forest Service and federally recognized Native American tribes have a special and unique government-to-government relationship of one sovereign nation to another, based on the U.S. Constitution, treaties, statutes, and court decisions.

The Apache-Sitgreaves National Forests (ASNFs) consult with ten tribes: Fort McDowell Yavapai Nation, Hopi Tribe, Navajo Nation, Ramah Navajo Chapter, San Carlos Apache Tribe, Tonto Apache Tribe, White Mountain Apache Tribe, Yavapai-Apache Nation of Camp Verde Indian Reservation, Yavapai-Prescott Tribe of the Yavapai Reservation, and Pueblo of Zuni. The ASNFs have one memorandum of understanding (MOU) with the Hopi Tribe.

The ASNFs encompass the aboriginal territory of many Native American tribes. Such lands are known or thought to contain many traditional cultural properties (TCPs) of concern and significance to tribal neighbors. TCPs are legally defined in the National Historic Preservation Act (NHPA) 1992 amendments as "eligible for listing in the National Register of Historic Places." Such sites now require consideration under NHPA regulation (36 CFR 800.3, (2)(B)(c), also 800.4, (4)), in concert with the National Environmental Policy Act (NEPA)(36 CFR 219.1, (5)(6), and 219.24, (a)(1-6)(b)(c)). Informed decisions require consultation on a government-to-government basis with these affiliated tribes (Executive Order (EO) 13175). No consultation has been conducted to determine which sites the ten affiliated tribes consider to be TCPs.

Tribes' use of Forest Service lands includes free, non-permitted activities, such as gathering boughs and basket materials, as well as the use of products, such as sawtimber, for which fees are charged.

Native American Graves Protection and Repatriation Act (NAGPRA) issues are critical and have not been resolved. NAGPRA provides a process for museums and Federal agencies to return certain Native American cultural items—human remains, funerary objects, sacred objects, and objects of cultural patrimony—to lineal descendants and culturally-affiliated tribes. Repatriation is needed, costly, and time-consuming. There is not adequate staffing to accomplish this.

Status of 1987 Forest Plan

In the past, TCPs were often referred to as "religious use areas" or "sacred areas" and were managed in accordance with the American Indian Religious Freedom Act (PL 95-341), under the "Special Interest Area" guidance in Forest Service Manual 2360 or were sometimes addressed in the socioeconomic sections of NEPA documents. The 1987 forest plan did not address these issues specifically.

Forest Plan Need for Change

Update forest plan direction to reflect new laws, policy, and regulation, including Executive Order 13175: Consultation and Coordination with Indian Tribal Governments and Native American Graves Protection and Repatriation Act.

Other Need for Change

- Clearly articulate the relationships with and responsibilities to Native American tribes, including the 2006 Memoranda of Understanding between the ASNFs and the Hopi Tribe.
- Resolve Native American Graves Protection and Repatriation Act issues.
- Consult with the ten affiliated tribes to identify traditional cultural properties.

Blue Range Primitive Area and Additions

1987 Forest Plan Desired Conditions (Goals and Objectives)

No specific desired conditions are listed for the Blue Range Primitive Area and additions. However one management area provides specific direction related to these areas.

Management Area 8 (Blue Range Primitive Area and Additions): Emphasize wilderness recreation while maintaining wilderness resource values.

Current Conditions and Trends

The only primitive area in the National Forest System is located on the Apache-Sitgreaves National Forests (ASNFs). The Blue Range was administratively designated by the Forest Service (L-20 regulations) as a Primitive Area in 1933 to preserve its wilderness qualities. Its 187,410 acres include deep, rugged canyons separated by steep, timbered ridges. In 1980, Congress designated the New Mexico portion of the Blue Range Primitive Area as wilderness. The Arizona portion of the primitive area was recommended for wilderness in 1984, but Congress did not designate the area. The Blue Range Primitive Area is managed as wilderness (Forest Service Manual 2320.3(11)).

The Blue Range Primitive Area is important in the distribution of wildlife species. It lies on both north-south and east-west migration corridors. Mule deer were abundant in the 1980s, but numbers have declined in recent years. Elk populations have fluctuated over the same time period. Threatened and endangered species that occur in the Blue Range Primitive Area include northern goshawk, Mexican spotted owl, Apache trout, Gila trout, loach minnow, razorback sucker, and spikedace. The Arizona Game and Fish Department (AZGFD) plans to reintroduce spikedace into identified critical habitat where it currently is not found.

The wide variety of vegetation types in the Blue Range Primitive Area reflects the area's topography. Vegetation types include madrean pine-oak woodland, ponderosa pine forest, mixed conifer with aspen forest, spruce fir forest, ponderosa pine forest, interior chaparral, semidesert grasslands, mixed broad leaf deciduous riparian forest, piñon-juniper woodlands, and montane willow riparian forest. Known invasive plant species are salt cedar, mullein, and musk thistle, which are found primarily along the Blue River and Apache County Road 67004.

There are approximately 270 miles of non-motorized trails throughout the primitive area; this number has not changed since 1984. Presently, some trails may not be passable because their maintenance has been deferred. In some locations, especially in the Hannagan Meadow area, increased visitor use has created a need for more trail maintenance. Many trails in the Blue Range Primitive Area are located in drainages and along creeks; some resource damage may be occurring in these locations.

Visitor use in 1984 for the Blue Range Primitive Area was estimated at 7,000 recreation visitor days. Most of this use occurred during the fall hunting seasons. At that time it was felt that the quality of the wilderness experience was not impaired and user expectations were met. Maximum group size was set at 25 people and/or 35 horses. The 1987 forest plan does not allow pack stock grazing in wilderness; therefore, all horse groups are required to carry feed.

The 2002 National Visitor Use Monitoring report does not provide use numbers or user characteristics for the Blue Range Primitive Area. During the last 10 years, Forest Service personnel have noticed an increase in summer use.

Status of 1987 Forest Plan

Some area changes since 1987 include:

- In 2000 the AZGFD re-introduced Gila trout into Raspberry Creek.
- Mexican gray wolves were re-introduced into the general area in 1998. The Blue Range Primitive Area is the primary zone of the re-introduction area.
- Trail access for Blue River Trail was recently improved with the acquisition of an AZGFD easement through private property and the construction of a new trailhead.
- Fire has been allowed to play a natural role in the primitive area ecosystem. In the last 20 years, 45 to 55 percent of the Blue Range Primitive Area has burned in either wildfires or through wildland fire use.
- Grazing allotment analyses have been completed.

Contributions to sustainability include the large size of the Blue Range Primitive Area and its relatively low use. Risks to sustainability include a lack of documented on-the-ground conditions and trends. A major risk to sustainability is the lack of funding for managing the Blue Range Primitive Area because it is not a designated wilderness.

Forest Plan Need for Change

- Move vegetation conditions toward a more sustainable and resilient state. Better describe the vegetation desired conditions.
- Consider guidelines to prevent the introduction of new noxious and invasive weeds, conduct early treatment of new noxious and invasive weed infestations, and contain and control established infestations of noxious and invasive weeds.

Other Need for Change

- Develop and implement a monitoring plan for the primitive area, in order to document existing wilderness values and on-the-ground conditions. Use currently accepted monitoring techniques and standards.
- Based on information gathered through monitoring, implement a management plan for the Blue Range Primitive Area.

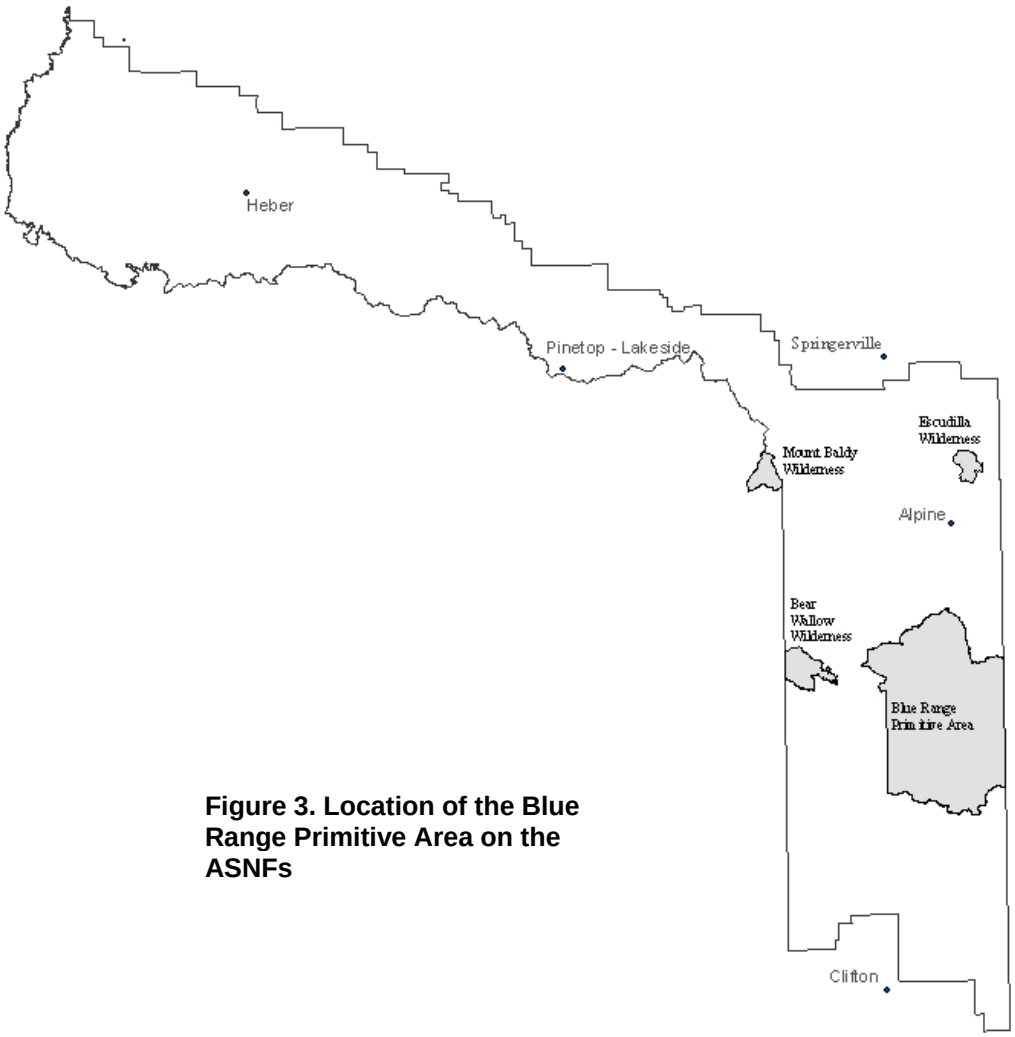


Figure 3. Location of the Blue Range Primitive Area on the ASNFs

Conservation Education

1987 Forest Plan Desired Conditions (Goals and Objectives)
Provide visitor information services (VIS) to interpret the resources, uses, and management of the forests.

Current Conditions and Trends

The conservation education component of the Apache-Sitgreaves National Forests (ASNFs) can be characterized by a few "points of light" across the forests. There are local examples of both formal and informal education occurring but, generally, the efforts are severely limited by available funding. There are two visitor information centers on the ASNFs but only one is staffed at a minimum level. The forests have developed an interpretive plan but have yet to fully implement it. Formal conservation education in schools is almost non-existent and relies on a few local educators to present materials that comply with State standards. The ASNFs have not been in a position to advocate for more agency involvement in environmental education in schools. There is no indication that this will change. Informal education in campgrounds, on tours, and at meetings occurs in a few locations and mostly for summer visitors.

The importance of having a viable conservation education program is affirmed often as there is a clear lack of public understanding of forest issues, laws, consequences of forest user behavior, and forest management actions.

Status of 1987 Forest Plan

The 1987 forest plan identified the need to improve "public information" to reduce resource conflicts and to promote "resource management practices such as prescribed burning." No specific desired conditions were identified in the existing plan but some of the same issues concerning education and public communication still exist today.

Forest Plan Need for Change

No need for change has been identified.

Other Need for Change

Improve conservation education efforts across the ASNFs to address the general lack of such activities in the state's school systems and to better connect forest users with their environment.

Fire and Fuels

1987 Forest Plan Desired Conditions (Goals and Objectives)
Fire is used as a resource management tool where it can effectively accomplish resource management objectives. Fire prevention and control are used to protect life, property, and resources.

Current Conditions and Trends

Fire managers have recently been faced with increasing costs, urban development, and unprecedented fire behavior. Decades of government policy directed at extinguishing every fire on public lands have disrupted the natural fire processes. Fire suppression, sustained drought, and increasing insect, disease, and invasive plant infestations have increased fuel loads to unnatural levels.

Agency fire management policies have changed dramatically during the past decade. On August 8, 2000, the President directed the Secretaries of Agriculture and the Interior to prepare a report recommending how best to respond to that year's severe fires, reduce the impacts of those fires on rural communities, and ensure sufficient fire management resources in the future. On September 8, 2000, the President accepted their report, "Managing the Impacts of Wildfires on Communities and the Environment," which provided an overall framework for fire management and forest health programs (Federal Register, Vol. 66, No. 3, 2001).

Because of that report, managers now operate in accordance with a multitude of policies including the Federal Fire Policy, the NFP (National Fire Plan), the HFI (Healthy Forests Initiative), and the HFRA (Healthy Forests Restoration Act). The NFP addresses five key points: firefighting, rehabilitation, hazardous fuels, community assistance, and accountability. These points provide technical, financial, and resource guidance for wildland fire management. The NFP addressed the shrinking firefighting workforce by hiring additional permanent and seasonal firefighters and permanent fire management staff.

In August 2001, "A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Strategy" (10-year strategy) was developed by the Western Governors' Association, the Secretaries of the Departments of Agriculture and the Interior, and many others, including counties and tribes. The group subsequently approved the "Implementation Plan for the 10-Year Strategy" in May 2002. An updated implementation plan was released in December 2006.

The President's 2002 HFI emphasized administrative and legislative reforms to expedite fuels treatments and post-fire rehabilitation actions. HFI administrative reforms created categorical exclusions for certain kinds of fuels treatments and post-fire rehabilitation actions. Congress gave long-term stewardship contracting authority to the Forest Service in February 2003. This authority led to the first, large, 10-year stewardship contract in the Nation—the White Mountain Stewardship Program (WMSP)—located on the ASNFs. The contract is for treatment of approximately 5,000 to 25,000 acres per year from 2004 through 2014.

Emphasis on fire-related issues comes at a cost to all other non-fire forest programs. As monies are increasingly allocated to fire-related issues, less is appropriated to other functions. Current budget projections predict fire spending to surpass all other areas combined in the near future.

Fire managers have been forced to focus on fire suppression in order to keep fires small, because unprecedented levels of fuels (flammable materials that contribute to extreme fire behavior) have become common. In an effort to qualify and quantify the departure of the ecosystem from the historic range of variability (HRV), the fire regime condition class (FRCC) is becoming more widely used (see the ASNFs' Ecological Sustainability Report). The categorical exclusion categories created by the HFI administrative reforms allow for fuels treatments in FRCC 2 or 3. Currently 85 percent of the forests' vegetation is in FRCC 2 or 3 (LANDFIRE Rapid Assessment).

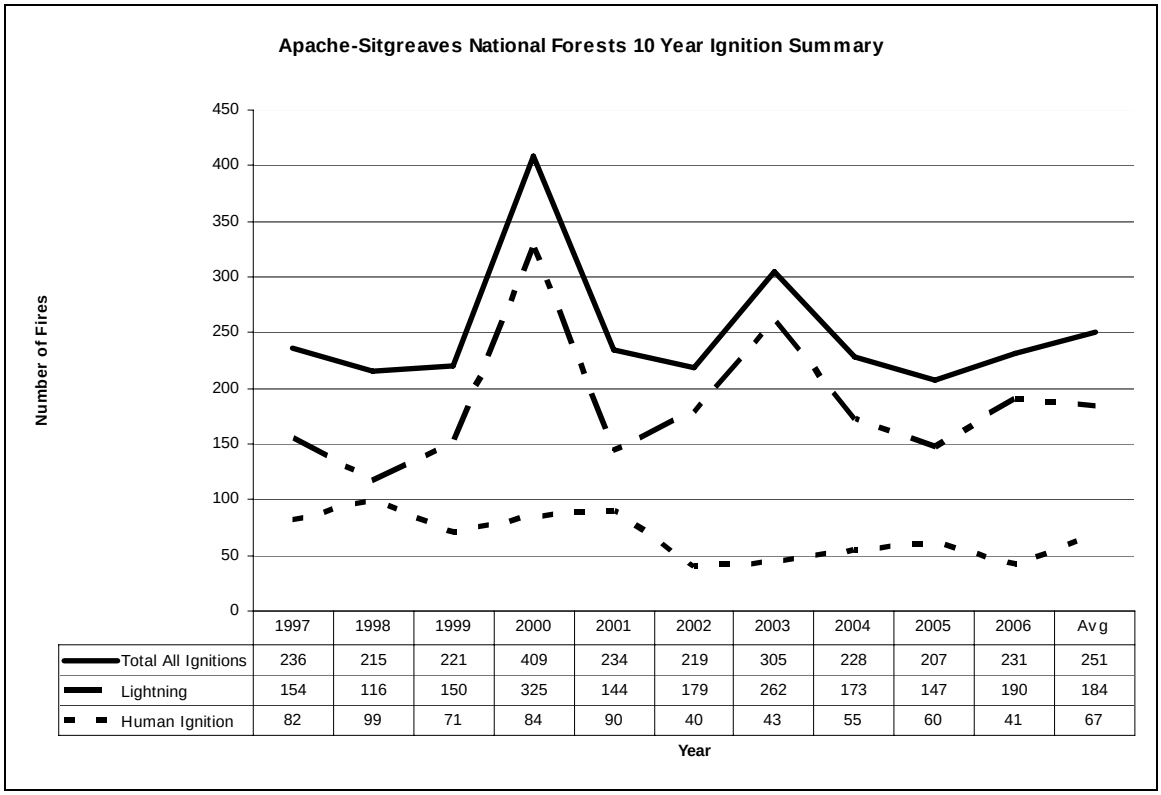
The original "10-Year Strategy and Implementation Plan" identified the need for land managers to work with local communities. The "Rural Fire Report" was developed in response to that need and is currently being implemented. The HFRA called for preparation of CWPPs to define the wildland-urban interface and to establish priorities for wildfire preparedness and hazardous fuels reduction work in these areas.

The wildland-urban interface, more commonly referred to as WUI (wōō'-ē) exists where humans and their developments meet or intermix with wildland fuels. The forests have three CWPPs that cover over 895,000 acres of WUI on Federal, county, private, and State lands and include 36 communities within the boundaries of the ASNFs. The CWPPs identify and prioritize areas for treatment based upon input from the communities. Priority areas routinely include the WUI and municipal watersheds. Some risk is inherent to communities that exist in fire-dependent ecosystems and that risk will never be eliminated.

The number of people living in the WUI continues to grow. For example, it was estimated in 2004 that there were approximately 25,000 full-time residents and about 80,000 seasonal residents (primarily summer) within the wildland-urban interface (WUI) of the communities, primarily west to east: Forest Lakes, Heber/Overgaard, Aripine, Clay Springs, Pinedale, Linden, Show Low, Wagon Wheel, Pinetop-Lakeside, Hondah, McNary, Vernon, Hideaways area, Greer, South Fork, Eagar, Springerville, Nutrioso, and Alpine (Navajo County et al. 2004). Growth in all the communities has been steady. For example, a local electrical cooperative reported an average of 1,300 to 1,500 new customers per year (Navajo County et al. 2004).

The HFI and the HFRA have equipped land managers with tools to address hazardous fuels and to begin restoring fire-adapted ecosystems. Hazardous fuels reduction projects are being conducted in the WUI in accordance with land management plans, fire management plans, and CWPPs. Since 2001 the ASNFs have treated 84,000 acres of WUI and 58,000 acres of non-WUI using fire and mechanical treatments.

According to the 2007 National Fire Plan Operations and Reporting System, from 1997 to 2006, approximately 250,000 acres burned on the ASNFs, 44,000 acres were the result of lightning ignitions and 206,000 acres were human-ignited fires. One fire, the human-caused Rodeo-Chediski Fire of 2002, burned 173,000 acres of this 10-year total. Humans started 28 percent of the wildland fires, with lightning igniting the remainder. Since the forest plan was written, the forests have been in a drought. The average number of fires per year (251) has not increased, but the average fire size has increased from 2 acres in 1997 to 43 acres in 2006.



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Avg
Total All Ignitions	236	215	221	409	234	219	305	228	207	231	251
Lightning	154	116	150	325	144	179	262	173	147	190	184
Human Ignition	82	99	71	84	90	40	43	55	60	41	67

Figure 4. Ten-year fire ignition summary on the ASNFs

The tactics used for all types of fires may be similar. When these actions are appropriate given the laws, policy, socio-political situation, and environmental conditions that are in effect at a given point of time, they are considered "appropriate management response" (AMR). AMR gives managers the tools needed to restore fire-adapted ecosystems in an increasingly complex landscape.

There is minimal direction in the current plan regarding smoke management. The forests have developed the White Mountain Smoke Management Strategy, a multi-agency coordination plan to ensure coordinated and informed smoke management decisions. The agencies involved include the ASNFs, Tonto National Forest, San Carlos Bureau of Indian Affairs (BIA), Ft. Apache BIA, White Mountain Apache Tribe, Arizona State Land Department, and Arizona Department of Environmental Quality (ADEQ). This plan is reviewed and updated yearly as part of the "Apache-Sitgreaves National Forests Fire Management Plan." The plan outlines the monitoring sites, field monitoring protocols, and burn request submission coordination and approval process.

Status of 1987 Forest Plan

Under the current forest plan, the primary objectives are to limit damage to life, property, and resource values caused by wildfire, and to limit human-caused ignitions. Current interagency fire policy recognizes three types of fire: prescribed fire, wildland fire use (WFU), and wildfire. Prescribed fire is a planned management action for resource benefit. WFU and wildfire are both unplanned ignitions. Naturally-ignited WFU fires are managed for resource benefit, whereas wildfires are suppressed. WFU fires in the Blue Range Primitive Area have burned 31,984 acres

from 1979 to 2006, averaging 1,142 acres per year and ranging in size from 2 to almost 20,000 acres.

Under current direction, suppression would continue as the primary fire management focus to protect life, property, and resources. Recent policy changes and planning emphasize hazardous fuels treatments and restoration of fire-adapted ecosystems. A forest plan amendment was completed in December 2007 to correct language in the forest plan to make it consistent with agency policy and direction regarding fire. It also modified the limitations on wildland fire use to allow broader application of it to meet resource objectives as established by the forest plan.

The primary objective for fuels treatment under the current forest plan is to reduce fire hazards, prepare a seedbed for natural regeneration, increase forage production for wildlife and livestock, and enhance Mexican spotted owl and northern goshawk habitat. The current plan does not fully recognize the ecological importance and benefits of fire. Additionally, canopy closure guidelines may not be desirable in all areas if mechanical treatments or prescribed fire are being used to mimic historic disturbance.

Forest Plan Need for Change

- The current forest plan's direction related to fire focuses mainly on suppression activities. Update forest plan direction to:
    - Restore and maintain appropriate fire regimes.
    - Reintroduce fire as a necessary ecological process to improve and maintain ecosystem health.
    - Reduce the potential for uncharacteristic fire in the WUI to protect life and property. This may include emphasizing the reduction of hazardous fuels.
- Update forest plan direction to reflect new laws, policy, and regulation including those related to fire management.

Forest Management

1987 Forest Plan Desired Conditions (Goals and Objectives)

On forested lands identified as suitable for commercial timber production, manage the timber resource to provide a sustained yield of forest products through integrated stand resource management. Timber management activities will be designed to integrate considerations for economic, water quality, soils, wildlife habitat, recreation opportunities, visual, and other values to meet forest plan objectives. Develop and implement a sustained yield program for firewood and other miscellaneous forest products including posts, poles, Christmas trees, and wildlings.

Through integrated pest management (IPM), manage resources to prevent a buildup of insects and disease to prevent or reduce serious, long lasting hazards. Manage to decrease dwarf mistletoe.

Current Conditions and Trends

Primary factors affecting current forest conditions are fire exclusion since the early 1900s, overgrazing in the late 1800s and early 1900s, and the practice of logging primarily larger diameter trees (sawtimber) with a limited ability to treat smaller diameter trees (prohibitive treatment costs) in the late 1800s through 1980-1990s. On at least a regional basis, the average number of large trees per acre, 15 inches in diameter and larger, is not much different between the 1910 and the 1999 inventories. This allowed smaller diameter trees to grow into dense stands across the landscape. The average density of ponderosa pine has increased from as few as 23 trees per acre in pre-settlement times to more than 850 trees per acre today, a substantial departure from the open park-like appearance of historical pine forests (Covington and Moore 1994). These current overly dense forests are outside the historic range of variability (HRV) and diverge from

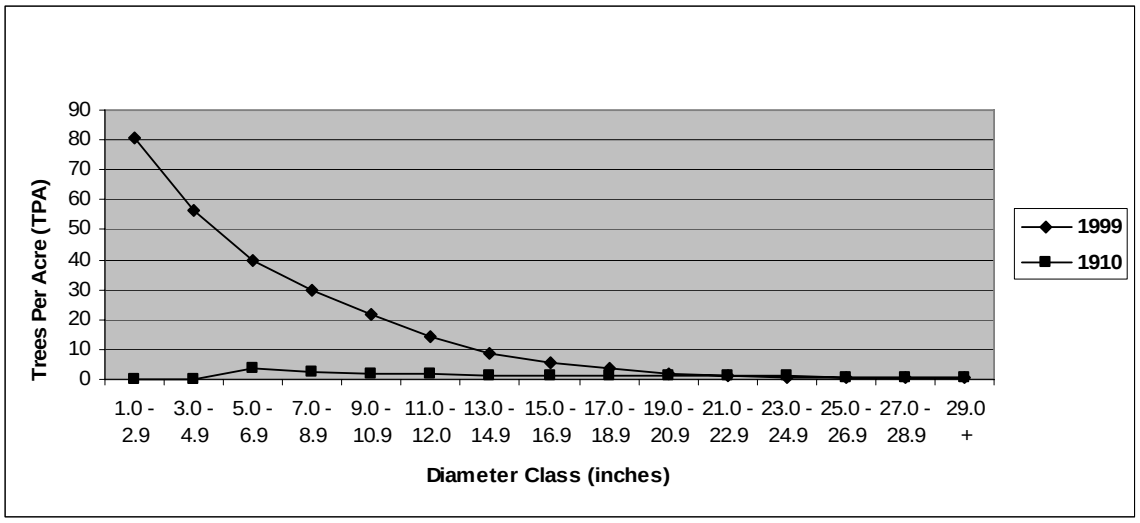


Figure 5. Ponderosa pine trees per acre by diameter class across the Southwestern Region over the last century (Region 3 FIA Inventory Data (1999) and Woolsey Inventory (1910) as prepared in 2004 by Regis Cassidy, R3 Silviculturist and Jeff Hogg, R3 Mensurationist)

natural fire regimes (see the ASNFs' Ecological Sustainability Report).

The composition of the Southwest's forests is changing. Forest inventories indicate that since 1962 the acreage of mixed conifer forests has more than doubled in the Southwestern Region (Johnson 1995). Shade tolerant species, such as white fir, have invaded ponderosa pine and aspen stands because of a lack of frequent, low intensity fire and drought (Anhold et al. 2006). The proportion of ponderosa pine and aspen cover types has been reduced (Johnson 1995). The ponderosa pine cover types have decreased only slightly.

Regional inventories in the southwest indicated that aspen cover types had declined about 46 percent between 1962 and 1986 (Johnson 1995). Since then, on a regional basis, there have been some increases in the aspen cover type acreages in the southwest, mainly due to recent large fires in New Mexico. However, many individual aspen clones in the southwest continue to decline (dieback or mortality) (Anhold et al. 2007). In Arizona, much of the damage, which includes dieback and mortality, continues to be a problem related to the severe drought of recent years (Anhold et al. 2007). Aspen damage was detected on a cumulative total of 94,085 acres from 1998-2006 on the ASNFs ("Forest Insect and Disease Conditions in the Southwestern Region Reports 1998-2006"). Observations on the ASNFs indicate that aspen has declined in many locations, except possibly where large areas of mixed conifer forests have recently burned.

Other forest types have changed since the turn of the century. For example, many piñon-juniper forests have become more dense and encroached into previously open grasslands. Over the last few years, the piñon-juniper forests in the southwest have suffered from large Piñon Ips beetle outbreaks (Anhold et al. 2006). On the ASNFs, Piñon Ips caused nearly 146,000 acres of piñon pine mortality at its peak in 2003 (Anhold et al 2003). The incidence of bark beetles from 1998 through 2006 is displayed below.

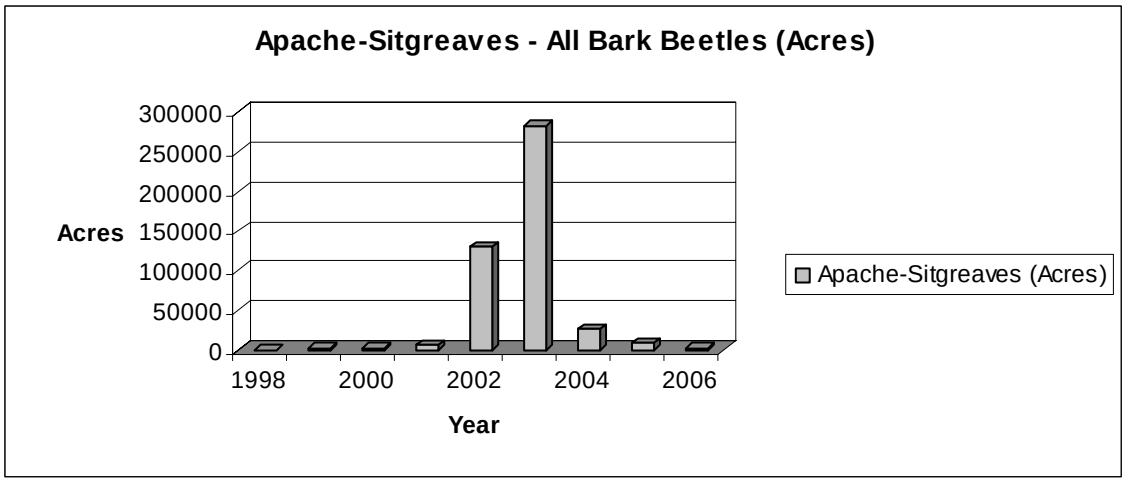


Figure 6. Total Bark Beetle Incidence (Acres) for the ASNFs (Southwestern Region Aerial Surveys; Forest Insect and Disease Conditions in the Southwestern Region Reports 1998-2006

At one time or another, insects or disease have extensively damaged the forest and woodland vegetation types. The most severe insect damage has been in spruce (spruce aphid) and piñon (Ips beetle) areas. The most extensive and damaging parasite in ponderosa pine is Southwestern dwarf

mistletoe (Lynch 2007). Forest health specialists for Arizona and New Mexico indicate that the incidence of dwarf mistletoe has most likely continued to increase (Anhold et al. 2007).

Since the mid-1990s additional factors, such as long-term drought and climate change, have exacerbated forest conditions with landscape-level forest mortality because of moisture stress, epidemic levels of various bark beetles, and increasingly large and destructive wildfires. For example, the 468,000-acre Rodeo-Chediski Fire, the largest in Arizona history, occurred in 2002 with approximately one-third of the burned acreage on the ASNFs. Continuing drought, ungulate browsing pressure, and other factors have increased aspen mortality and resulted in the loss of entire aspen clones (Anhold et al. 2006).

In the 1987 forest plan, over 750,000 acres were identified as suitable for timber harvest. It was estimated that the long-term sustained yield (LTSY) for timber production was 36,813 thousand cubic feet per year. LTSY is the highest uniform wood yield that may be sustained under specified management intensities consistent with multiple-use objectives after stands have reached desired conditions. This estimate will be recalculated during the revision process.

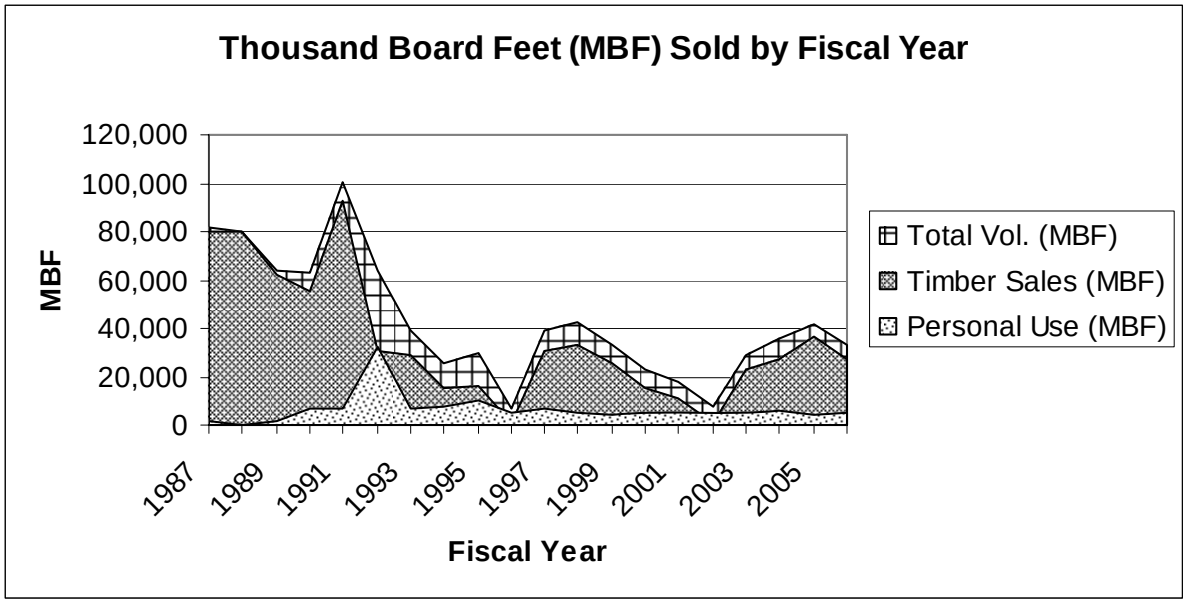


Figure 7. Volume of wood products sold from fiscal year 1987 through 2006 on the ASNFs

A variety of forest products have been sold on the ASNFs since the 1987 forest plan, the amounts of which have generally declined since the early 1990s (figure above). This downturn was related, in part, to increasing litigation, listing of the Mexican spotted owl, and loss of markets. Recent increases are the result of WMSP contract, Rodeo-Chediski Fire Salvage, other mechanical treatments, and gradually improving markets. Personal use volumes primarily represent personal use firewood sales.

Small commercial sale volume, as depicted in the figure below, includes firewood, house logs, and other miscellaneous commercial products.

Nationally, timber harvest on national forests declined from 9.9 billion board feet to 1.1 billion board feet between 1986 and 2003. Associated with this decline is the reduction in capacity to

process timber by 37 percent. This lack of processing capacity is of national concern. In the West, there is a particular concern regarding the lack of processing capacity for markets of small diameter timber (U.S. Forest Service 2007a).

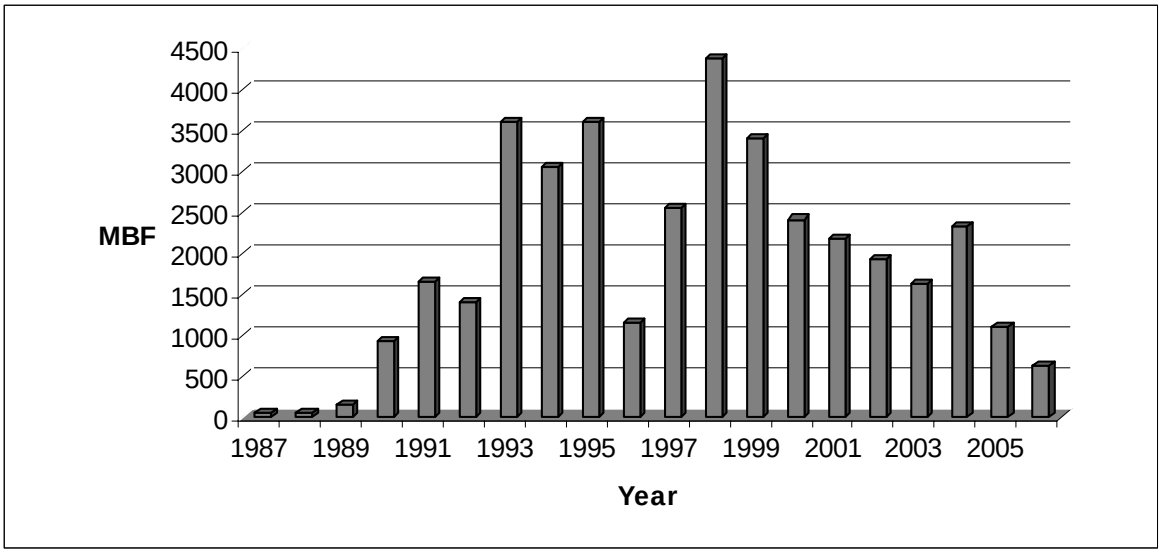


Figure 8. Volume of wood sold through Small Commercial Sales by Thousand Board Feet (MBF) by year (Source: ASNFs' Periodic Timber Sale Accomplishment Report (PTSAR))

The decline of timber sales and the disappearance of most local wood product industries over the last several years results in the ASNFs having to pay for most silvicultural treatments. Decline of local processing capacity was evidenced by the closing of several sawmills, and the paper mill near Snowflake, Arizona, converting to using 100 percent recycled paper material in the late 1990s. Recent trends show an improving marketplace. As of May 2008, five businesses were utilizing White Mountain Stewardship small diameter logs and their annual green ton requirements: Forest Energy, 100,000 tons; Terry Reidhead, 63,000 tons; AZ Log & Timberworks, 2,500 tons, WinterCircle, 7,500 tons; and Renegy, 70,000 tons. There are two businesses, Western Moulding and Arizona Structural Laminators, that utilize fiber from the forests and three additional companies are anticipated to be in place by the end of 2008.

Status of 1987 Forest Plan

In 1987, timber sales were the norm and revenue was generated to fund forest improvements, such as road reconstruction or maintenance, or was returned to the Federal Treasury. A major change in the forest management program occurred with the adoption of the Forest Plan Amendment Six in 1996. This amendment incorporated standards and guidelines for the protection of the Mexican spotted owl and the northern goshawk. Prior to the amendment, management practices emphasized even-aged silvicultural systems with variation between stands (integrated stand resource management) and wood volume accomplishments emphasizing sawtimber sales (large diameter trees). With the amendment came a shift toward uneven-aged silvicultural systems stressing within-stand variation and multi-product sales (smaller diameter trees). The direction associated with this amendment is often in conflict with management objectives to thin forested areas near wildland-urban interface areas, and has resulted in four site-specific amendments to the forest plan.

As displayed in figure 9, mechanical treatments, including harvesting, commercial thinning, pre-commercial thinning, fuels treatments, and other tree removal activities, were conducted at relatively high levels until the mid-1990s. Decreases were related to increasing litigation, listing of the Mexican spotted owl as threatened species and a decline in local wood processing capacity.

In the 1987 forest plan, land was allocated in Management Area 13 (Escudilla Demonstration Area) for educational purposes to demonstrate various silvicultural practices. This area has not been utilized for that purpose.

The wildland-urban interface, more commonly referred to as WUI exists where humans and their developments meet or intermix with wildland fuels. In about 2000, direction shifted to emphasize fuels management projects within the wildland-urban interface (WUI) and acreage accomplishments over volume accomplishments. Approximately 150,000 acres of fuels treatments were completed between fiscal years 2001 and 2006, including thinning (mechanical), prescribed fire, and other treatments. The intent of these projects is to reduce the fire hazard on forest lands adjacent to private property.

Stewardship end results contracting is a new forest management tool developed since the adoption of the ASNFs forest plan in 1987. The Forest Service and the Bureau of Land Management received this new authority from Congress, for a period of 10 years, in February 2003 in the 2003 Appropriations Act (section 323 of Public Law 108-7). Stewardship contracting authorizes the Forest Service and the Bureau of Land Management to offset the costs of restoration services provided by the value of goods removed, such as pre-commercial thinning and fuels reduction activities. Stewardship end results contracting is designed to restore forest and rangeland health, reduce the risk of wildfire to communities, reduce the cost of forest restoration to taxpayers, support local economies and encourage new wood product industries and uses for the thinned wood fiber.

The contracting authority led to the first large, 10-year stewardship contract in the Nation being awarded in August 2004, the White Mountains Stewardship Project (WMSP) contract, located on the ASNFs. The contract is for treatment of approximately 5,000 to 25,000 acres per year over the 10-year contract term. The recent upswing in forest acres treated is the result of the WMSP contract, Rodeo-Chediski Fire salvage operations, and other mechanical treatments. However, it should be noted that these increases are still less today than in the past. As of February 2008, task orders for the treatment of over 33,000 acres have been issued, over 23,000 acres of thinning completed, and

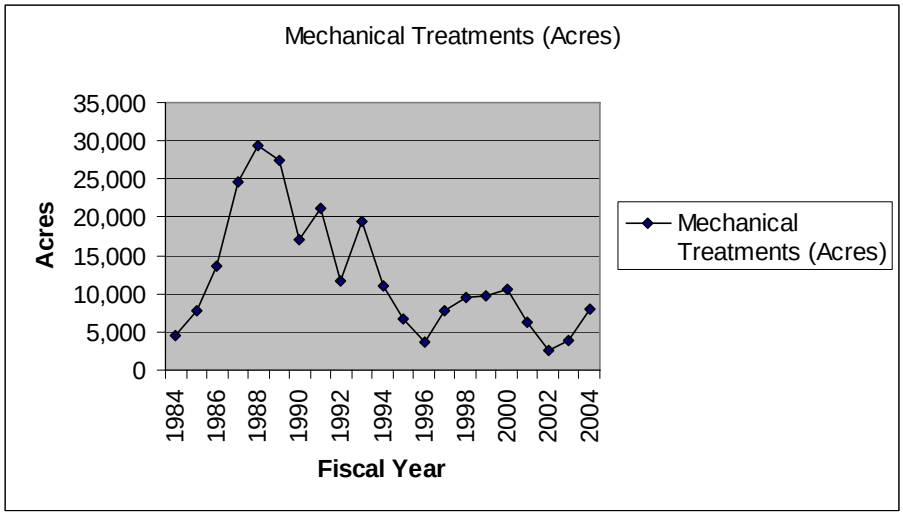


Figure 9. Approximate acres of mechanical treatments by fiscal year (Forest Activity Tracking System Database)

more than 600,000 green tons of biomass removed from the forests. Thinning treatments are currently concentrated in the wildland-urban interface of White Mountain communities.

There has been some forest restoration, particularly within areas managed under the goshawk guidelines. Other restoration efforts, those with forest health or fuels reduction emphases, have occurred. These efforts are primarily the result of the Healthy Forest Restoration Act of 2003 (HFRA), the WMSP contract, and gradually improving markets for small diameter trees.

Forest Plan Need for Change

- The current forest plan does not provide clear desired condition descriptions of vegetation. The plan needs to be revised to include vegetation desired conditions that:
    - Move forest ecosystems toward a more sustainable state with an appropriate mosaic of vegetation conditions across the landscape in order to restore forest ecosystem resilience to natural and manmade stresses.
    - Focus on restoration of fire-adapted ecosystems and appropriate fire regimes.
    - Incorporate an ecological approach to multiple-use management to restore healthy forest ecosystems.
    - Continue the availability of a wide array of wood outputs, from small to large offerings, to meet a variety of resource management objectives and meet local and non-local demand.
- Reconsider the land allocation for Management Area 13 (Escudilla Demonstration Area). This area was set aside for educational purposes to demonstrate various silvicultural practices and has not been utilized for that purpose.
- Update forest plan direction to reflect new laws, policy, and regulation including Healthy Forests Initiative and Healthy Forest Restoration Act
- Update and eliminate conflicting guidelines for Mexican spotted owl, northern goshawk, old-growth, wildlife hiding cover along roads, defensible space around structures, and canopy cover, etc. and provide more flexibility for management activities to achieve desired conditions, while still protecting species.
- During the development of the revised plan, both lands generally suitable for timber production and the LTSY will be analyzed and recalculated.
- Develop plan components to focus on restoration of fire-adapted ecosystem and include objectives such as reforestation, revegetation, and watershed and fuel treatments. Utilize a wide variety of methods, including silvicultural treatments, tree planting and salvage.

Other Need for Change

- Encourage wood fiber markets and uses for the variety of products that will contribute to ecosystem restoration.
- Utilize a variety of methods and tools to accomplish ecosystem restoration, including those that contribute to local economic and social sustainability.
- Implement vegetation treatments and silvicultural practices that promote vegetation structural composition that contribute to vegetation sustainability and resiliency.

Geology

1987 Forest Plan Desired Conditions (Goals and Objectives)

This resource was minimally considered in the 1987 forest plan. There are no specific goals or objectives related to geology.

Current Conditions and Trends

Since publication of the 1987 forest plan, additional information regarding various areas of geologic instability has become available. Although these areas are not managed in the same sense as other resources, they are managed through avoidance of impacts that may trigger their activation or exacerbate their movement.

Geologic formations that occur on the Apache-Sitgreaves National Forests (ASNFs) and are associated with slumps and mass failures are the Datil, Gila Conglomerate, and Moenkopi Formations. Standard measures of avoiding mass movement triggering apply to all construction activities, as well as silvicultural treatments.

The Datil Formation consists of volcanic ash of unknown source. The unconsolidated material varies in texture from sandy and silty to clayey. It can produce landslides of relatively shallow depths, commonly seen as white scarps on the Springerville and Alpine districts, all the way to deep-seated rotational slides. The largest known slide of Datil geology is located south of Springerville and Eagar and covers an area from near Picnic Hill and Murray Basin west to Greer and from the Little Colorado River south to the rim area just north of Mexican Hay Lake. This entire area has the typical hummocky topography of a mass movement. It also contains numerous springs and basins, typical of landslides. It has moved recently and throughout geologic time. Its geologic movement is not evident in distorted tree growth forms, which attests to stable conditions over at least the last century, as 100- to 150-year-old trees do not display typical "pistol butts" seen in actively moving areas. However, the base of the slide has forced the Little Colorado River up against the extensive lava flow to the north. The river continually erodes the base of the slide, keeping it in constant slow motion. More recent instability is evidenced by the white scarps left by shallow slides. In one case a water well casing was pinched off, resulting in the loss of the well and pump.

Across Arizona, the Moenkopi Formation has a history of dam failures, leaking reservoirs, and slumping from exposed road cuts or cliffs. The formation is present as basement geology across the ASNFs. It consists of partially consolidated marine silts and clays of reddish to orange color and is often difficult to revegetate because of toxic levels of various salts and lime.

The Gila Conglomerate Formation extends across broad areas of the Clifton district. It consists of relatively thick, partially consolidated alluvium, which is moving continuously because various drainages remove material from the bases of the slides. Most of the known unstable areas are located near the middle of the Blue River, on both the east and west sides of the river. One of the largest slides took the Blue Box Bridge out of service and affected the county road along the east side of the Blue River. The Blue River continuously removes the slide's toe, keeping it from stabilizing. This particular slide is approximately 8 square miles. Except for the slides adjacent to the Blue River, most of the unstable areas are located in undeveloped areas, where they do not directly affect management activities or infrastructure.

Status of 1987 Forest Plan

The 1987 forest plan does not mention geology as a topic of concern. Unstable soils associated with the Datil and Gila Conglomerate Formations were mentioned in the 1987 "Apache-Sitgreaves National Forests Land and Resource Management Plan Environmental Impact Statement" (p. 161) and the "Analysis of the Management Situation" (p. XI-24).

Risks associated with these areas include potential impacts to infrastructure and increased stream sedimentation and the associated impacts to wildlife and fish species.

Forest Plan Need for Change

There is a need to recognize areas of geologic instability and develop plan components that provide guidance for activities in these areas.

Other Need for Change

- Mass movements and failures presently unknown will continue to be identified and mapped. The locations of these features need to be incorporated into management decisions and project planning.
- Develop BMPs regarding mass movement prevention.
- Develop plans and mitigation measures for mass movement related impacts to existing infrastructure.

Heber Wild Horse Territory

1987 Forest Plan Desired Conditions (Goals and Objectives)
This topic was not considered in the 1987 Forest Plan. There are no specific goals or objectives related to the Heber Wild Horse Territory.

Current Conditions and Trends

The Heber Wild Horse Territory (territory) comprises approximately 20,000 acres in the Black Canyon area southwest of Heber, Arizona. The territory was established under the Wild Free- Roaming Horse and Burro Protection Act of 1971 (the Act). The purpose of the Act was to establish territories for use by and for the protection of wild horses. There is considerable controversy as to whether the horses currently found in this area are descendants of the original wild horses or are horses that have trespassed onto Forest Service lands from other ownerships.

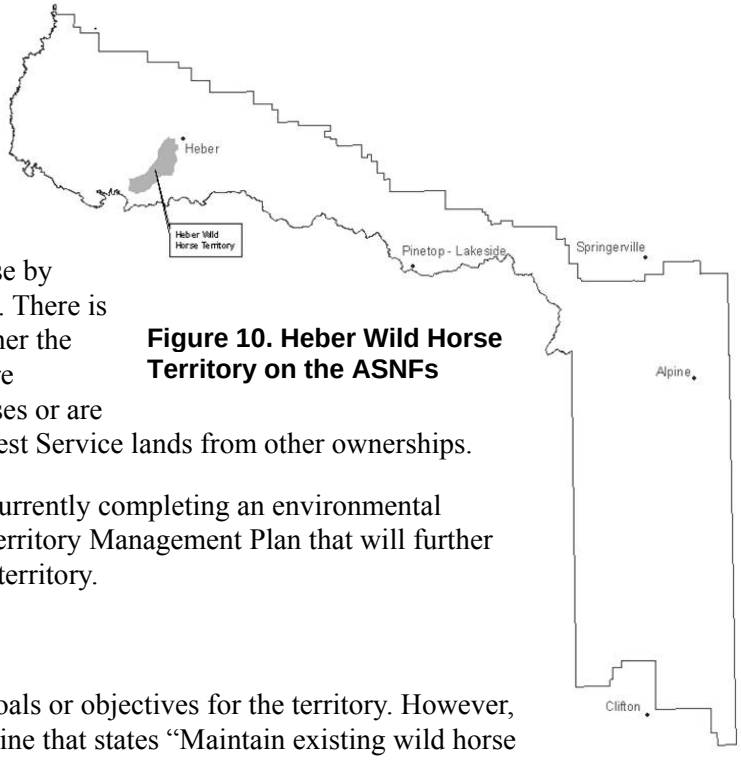


Figure 10. Heber Wild Horse Territory on the ASNFs

The Black Mesa Ranger District is currently completing an environmental analysis for the Heber Wild Horse Territory Management Plan that will further detail management direction for the territory.

Status of 1987 Forest Plan

The plan does not contain specific goals or objectives for the territory. However, it does contain a standard and guideline that states "Maintain existing wild horse territory and herd." Direction for its management will be contained in the Heber Wild Horse Territory Management Plan, which is currently under development.

Forest Plan Need for Change

There is a need to revise or amend the forest plan to delineate the Heber Wild Horse Territory and incorporate the management plan by reference.

Other Need for Change

None identified.

Heritage Resources

1987 Forest Plan Desired Conditions (Goals and Objectives)

Inventory, evaluate, nominate, protect, study, interpret, and enhance cultural resources in accordance with the management prescriptions. Coordinate planning for these activities with the State Historic Preservation Office, State Archeologist, and other State and Federal agencies.

Current Conditions and Trends

Most heritage resource inventory and site recording since 1987 has been conducted for large forest health projects. Numerous small areas have been inventoried for projects involving the wildland-urban interface, prescribed fire, wildfire, grazing allotments, and recreation. As of 2006, over 450,000 acres (approximately 20 percent of the ASNFs) have been surveyed, resulting in the identification of more than 6,000 archeological sites.

The ASNFs continue to fall short of meeting the requirements of the Regional Programmatic Agreement with the Advisory Council on Historic Preservation and the State Historic Preservation Office (SHPO), which requires the forests to conduct Section 110 archeological surveys in return for reduced reporting to the SHPO. Section 110 of the National Historic Preservation Act (NHPA) governs Federal agency programs by providing for consideration of historic preservation in the management of properties under Federal ownership or control.

Status of 1987 Forest Plan

The 1987 forest plan desired conditions are adequate for the management of heritage resources, but have not been adequately implemented due to funding and priorities.

Major changes in Federal laws require modifications to Federal agencies' heritage program management. These include the 1992 amendments to the NHPA Sections 110, 111, 112, and 36 Code of Federal Regulations (CFR) 800; the 1992 changes to the Archeological Resources Protection Act regulations (36 CFR 296); passage of the Native American Graves Protection and Repatriation Act and its implementing regulations (PL 101-601, 1990 and 43 CFR 10, 1996); issuance of the Department of the Interior's Technical Bulletin 38, "Guidelines for Evaluating and Documenting Traditional Cultural Properties," in 1990; issuance of President Clinton's Executive Order 13007, "Indian Sacred Sites," in June 1996; and issuance of President Bush's Executive Order 13287, "Preserve America," in March 2003.

Taken collectively, these modified and new mandates call for substantially greater efforts by Forest Service heritage programs in the areas of Native American consultation, collections management, public education and public service projects, site stewardship, and site protection. The mandates for new forms of public involvement, analyses, field inventories, and management pertaining to Sacred Areas and Traditional Cultural Properties, in particular; represent a quantum increase in complexity and accountability for all forest heritage programs.

Full and complete inventory, evaluation, and protection of heritage resources, as well as emphasis on interpretation and enhancement, are at risk because of inadequate funding and other forest priorities.

Forest Plan Need for Change

Update forest plan direction to reflect new laws, policy, and regulation related to the heritage program

Other Need for Change

- Develop a more proactive heritage resource program, with additional emphasis on outreach and education.
- Meet the requirements of the Regional Programmatic Agreement, including Section 110 surveys.

Inventoried Roadless Areas

1987 Forest Plan Desired Conditions (Goals and Objectives)
There are no specific goals or objectives related to inventoried roadless areas.

Current Conditions and Trends

There are 17 inventoried roadless areas (IRAs) within the Apache-Sitgreaves National Forests (ASNFs). These areas total approximately 322,000 acres and account for approximately 28 percent of the total IRA acreage in Arizona.

In general, these areas consist of rough, broken terrain with steep-sided canyons and are located in low population areas.

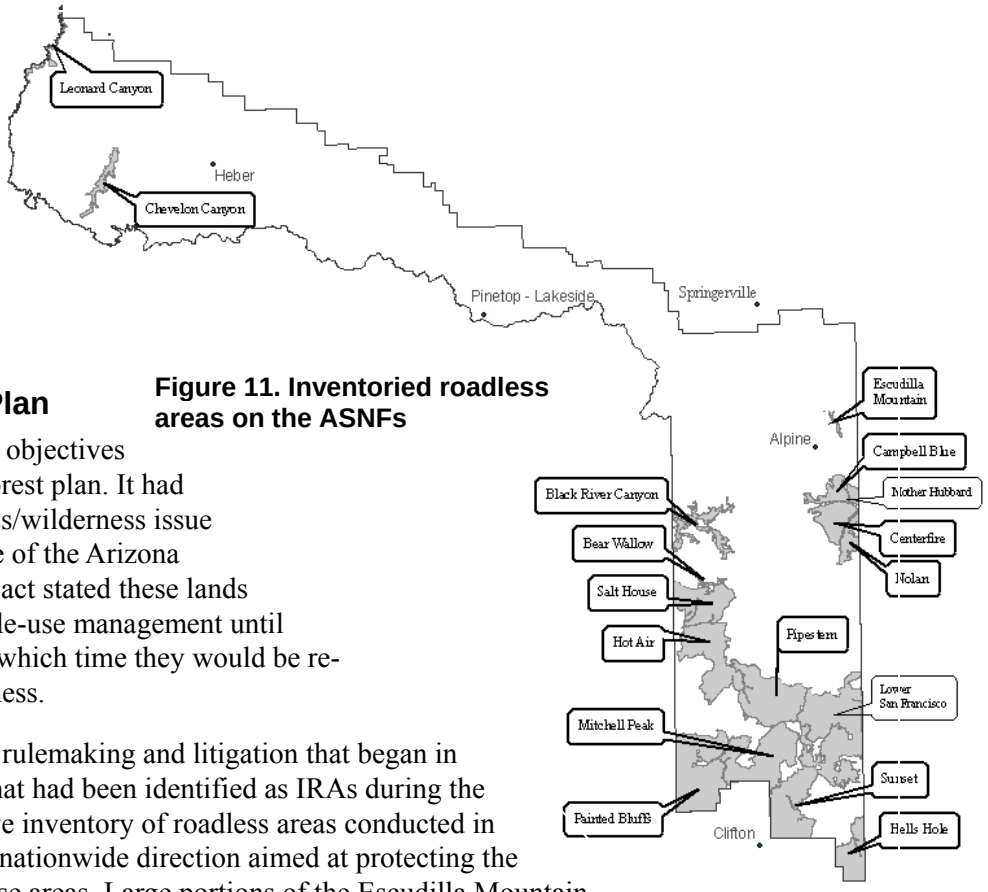


Figure 11. Inventoried roadless areas on the ASNFs

Status of 1987 Forest Plan

There are no specific goals or objectives related to IRAs in the 1987 forest plan. It had been assumed that the roadless/wilderness issue was resolved with the passage of the Arizona Wilderness Act of 1984. This act stated these lands should continue under multiple-use management until revision of the forest plan, at which time they would be re-evaluated as potential wilderness.

Following a series of Agency rulemaking and litigation that began in 2001, management of areas that had been identified as IRAs during the RARE II process (an extensive inventory of roadless areas conducted in 1979) was required to follow nationwide direction aimed at protecting the roadless characteristics of these areas. Large portions of the Escudilla Mountain and Bear Wallow IRAs were congressionally designated as wilderness in the Arizona Wilderness Act of 1984.

At the time of this writing, the 17 IRAs on the ASNFs are managed under the 2001 Roadless Rule which limits road construction/reconstruction and timber harvest.

Current management of IRAs contributes to opportunities for solitude and relatively undisturbed areas for wildlife. Risks are related to public concern regarding loss of economic opportunity and motorized access.

Forest Plan Need for Change

- Evaluate the inventoried roadless areas (IRAs) to determine their suitability for inclusion in the National Wilderness Preservation System.
- For those IRAs that are not suitable for inclusion in the National Wilderness Preservation System, determine their future management emphasis (Roadless Area Conservation Rule, general forest, backcountry, etc.).

Other Need for Change

None identified.

Law Enforcement

1987 Forest Plan Desired Conditions (Goals and Objectives)

Cooperate with State and local law enforcement agencies to properly protect forest resources, employees, visitors, and property.

Improve the law enforcement program by taking an aggressive posture that emphasizes good public education, better employee training, more employee field presence, increased line manager accountability, and increased public awareness.

Current Conditions and Trends

The Apache-Sitgreaves National Forests (ASNFs) continue to work cooperatively with other law enforcement agencies. There are five cooperative law enforcement agreements currently in place that provide some funding to other agencies in exchange for a law enforcement presence.

There are currently four uniformed law enforcement officers assigned to the ASNFs. The primary focus of their jobs is the protection of natural resources, Forest Service employees, and visitors. There are also forest employees, primarily fire and recreation technicians, that serve as forest protection officers and help to supplement the law enforcement presence on the forests.

The law enforcement program is not administered by the ASNFs; oversight is centralized at the Southwestern Region regional office in Albuquerque. This organizational design allows law enforcement personnel to conduct investigations and enforcement activities independently.

The law enforcement workload has grown substantially because of increased visitor use and considerable population growth in urban centers within one day's travel of the ASNFs. Recent illegal activities include marijuana cultivation, drug and undocumented immigrant corridors, and illegal wood cutting, especially old growth alligator juniper and oak. The figure on the right shows the number of incidents and violations over the last several years. The actual on-the-ground situation may be different because there are a limited number of law

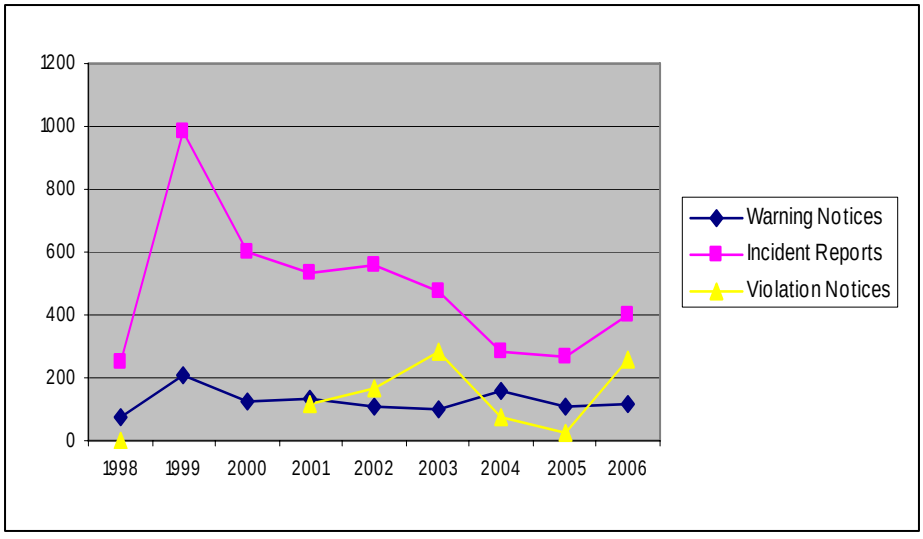


Figure 12. Trends in warning notices (issued in lieu of a ticket), incident reports (documentation of an incident found after the fact), and violation notices (tickets) on the ASNFs from 1998 to 2006

enforcement personnel issuing citations and that unarmed forest protection officers may not be willing to confront dangerous violators.

It is anticipated that there will be additional law enforcement needs related to the implementation of the Travel Management Rule. This rule will prohibit motorized vehicles from traveling cross-country and will limit their operation to designated routes and areas. There is concern that law enforcement's present capacity is not adequate to manage ongoing illegal activities as well as enforce upcoming mandates (i.e. implementation of the Travel Management Rule).

Status of 1987 Forest Plan

The desired condition related to cooperating with other agencies is still valid and being achieved.

The second desired condition is still valid; however, it is based on the assumption that the forests will have adequate law enforcement staffing and budget.

The stated desired conditions help contribute to sustainability by protecting the public, property, and natural resources. However, the desired condition is at risk because existing budgets limit the law enforcement presence on the forests. With the increase in urban-related law enforcement needs, natural resource protection may be at risk.

Direction related to cooperating with other agencies, crime prevention and awareness, and other law enforcement policies are found in the Forest Service Manual (FSM 5300).

Forest Plan Need for Change

No need for change has been identified.

Other Need for Change

- Focus law enforcement on resource protection and the achievement of forest plan desired conditions.
- As stated in the current forest plan, the forests need to continue to emphasize the law enforcement program and provide an increased visible law enforcement presence. Consider alternative strategies for providing effective law enforcement coverage.

Minerals

1987 Forest Plan Desired Conditions (Goals and Objectives)
Administer the mineral laws and regulations to minimize adverse surface resource impacts. Support sound energy and minerals exploration and development.

Current Conditions and Trends

The potential for locatable and leasable minerals on the Apache-Sitgreaves National Forests (ASNFs) is low because of the existing geology. Additional exploration for locatable minerals will most likely be limited. Numerous active mining claims for locatable sandstone are located on the Lakeside Ranger District (six to eight separate claimants). Each claimant operates under an approved plan of operations. Also, several mill sites are located on the Clifton Ranger District and support adjacent private copper mining operations. There are no known abandoned mines on ASNFs lands that would require closure. A number of small abandoned surface operations and test pits are scattered across the forests and are not regarded as hazardous.

Mineral materials include sand, gravel, landscape rock, cinders, and crushed rock. The demand for mineral materials from the ASNFs is currently low. Permitted uses are predominantly small private sales from common use pits, a multi-operator commercial pit, and various pits for State and county road uses, primarily for road cinders. Sales of mineral materials in FY 2006 amounted to 18,400 tons, valued at $9,660. Free use permits were issued for 25,300 tons. The Forest Service uses materials for routine maintenance of Forest Transportation System roads, and some rock crushing occurs for project-specific needs. In FY 2006 the Forest Service used almost 500,000 tons of mineral materials. These uses are expected to continue. There may be additional pressure for mineral materials as private lands adjacent to the forests are developed.

The Forest Service will respond to future operating plans for valid locatable mineral development as they are submitted and will respond to valid leasable mineral proposals as a cooperating agency when requested by the Bureau of Land Management. Proposals for development of discoveries will likely be infrequent.

All current mineral withdrawals are reviewed for need on an as-needed basis. Withdrawals from mineral entry will be initiated for administrative sites, developed public recreations areas, and areas highly valued by the public, such as visual corridors. A withdrawal is the withholding of an area from application of the general land laws (including the mining laws) for the purpose of limiting activities in order to maintain other public values in the area or reserve the area for a particular public purpose or program.

Status of 1987 Forest Plan

The 1987 forest plan desired conditions are being met.

Forest Plan Need for Change

No need for change has been identified.

Other Need for Change

- Rehabilitate land that has been disturbed by mining activity, including reshaping the landscape to attain relatively natural contours, re-establishing native vegetation, and protecting the site from surface erosion.

Motorized Travel Management

1987 Forest Plan Desired Conditions (Goals and Objectives)

Provide and manage a serviceable road transportation system that meets needs for public access, land management, resource protection, and user safety. Provisions are made for construction/reconstruction, maintenance, seasonal and special closures, and obliterating unnecessary roads.

Current Conditions and Trends

The Apache-Sitgreaves National Forests (ASNFs) have an extensive road network, mainly constructed for past management activities including timber sales. The table below displays the miles of roads within the ASNFs.

Forest users have changed over the last 20 years, in conjunction with the aging and increasing population of Arizona. Recreational visitor use continues to increase on remote, high-clearance vehicle roads and on paved routes to developed campgrounds and other recreation sites. Recreational vehicle traffic and off-highway vehicle (OHV) use have both considerably increased. Dispersed camping with motor homes, trailers, truck campers, "toy haulers," and tent trailers is a common and popular activity. These camps are often accompanied by various OHVs for motorized travel out of the base camp. Establishment of unauthorized user-created routes, motorized cross-country travel, and illegal motorized use on closed roads are common occurrences. Roads during hunting seasons and holidays generally have increased motor vehicle traffic volumes.

Table 1. Approximate road mileages based on the ASNF' spatial transportation atlas, 4-18-07

	Mileage
Total Existing Roads within Forests	6,786
Decommissioned NFS Roads	198
Selected Route Types	
Existing National Forest System Roads	6,119
Maintained for Passenger Car Use	728
Maintained for High-clearance Vehicles	2,028
Administrative Use Only-Closed to Public	3,363
Non-System Public Roads	591

Unmanaged recreation has been identified as one of the four threats to the health of the Nation's forests. The phenomenal increase in national forest use for all recreational activities has elevated the need to manage most forms of recreation, including the use of OHVs. The Travel Management Rule (TMR), released in 2005, is a national policy that will begin to address this threat.

TMR provides regulations for designating a motorized use system, with emphasis on sustainability. The ASNFs are currently open to cross-country motorized travel unless posted closed or when use causes resource damage. Upon implementation of TMR, the ASNFs will

designate a system of roads, trails, and areas for public motorized vehicle use and will prohibit motorized travel off of the designated system.

National Forest System (NFS) roads in proximity to communities have been and will continue to be utilized for wildland-urban interface fuels treatments. Most of these roads will require improvements to accommodate modern logging equipment.

Status of 1987 Forest Plan

The desired conditions are still adequate for providing strategic guidance. The current transportation system provides sufficient access for the public and for management, although in an economically unsustainable manner as current and anticipated budgets provide for less than one third of the road system annual and deferred maintenance needs. In 2005, deferred road maintenance needs were estimated to be greater than $50 million. Road construction and maintenance funding since 1987 has decreased in part because of major reductions in timber harvest activities over the last 16 years. The reduction in timber sales has also resulted in a backlog of maintenance needs.

Environmentally, the current management that allows cross-country motorized use on most of the forest is unsustainable. The change from the current situation to the designated route format required by the TMR will be a major shift. Increases in technology and Arizona's population also must be considered when planning for forest utilization, public access provisions, and environmental conservation.

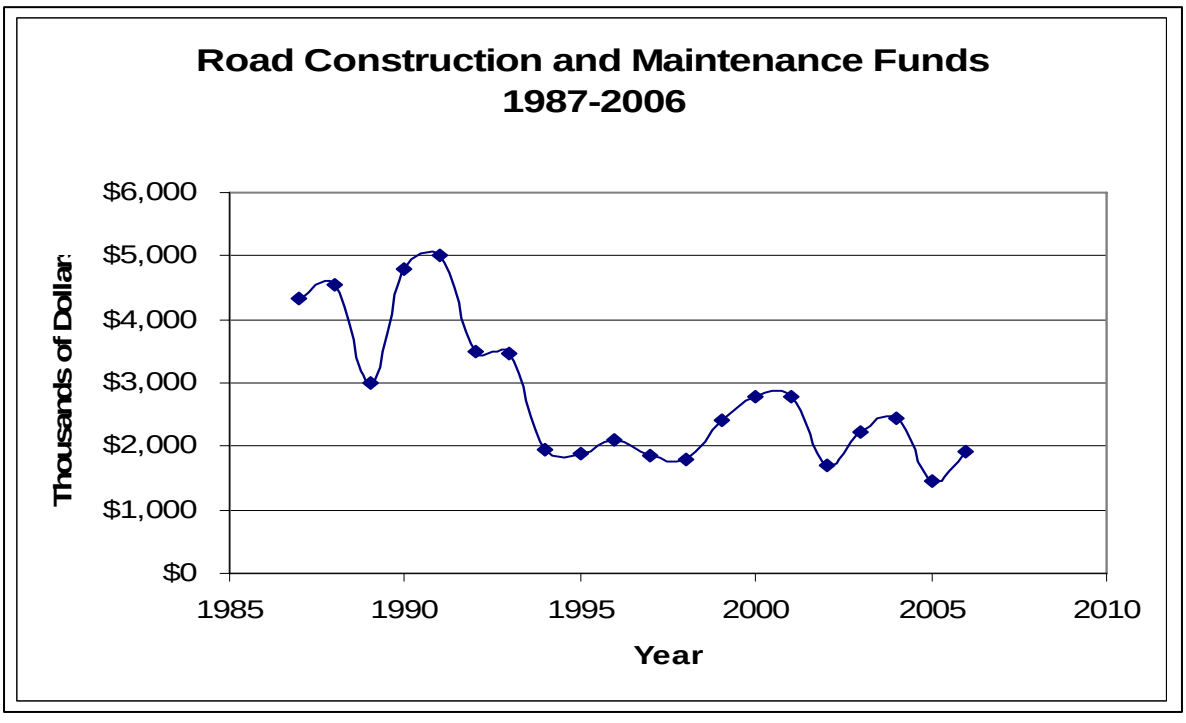


Figure 13. ASNFs road construction and maintenance funding 1987 to 2006 (in 2007 dollars)

The 1987 forest plan standards and guidelines state "total road densities should average 3.5 miles per square mile or less. Open road densities should average 2.0 miles per square mile or less." These standards and guidelines continue to be incorporated into individual project-level

decisions. Clarification and expansion of these guidelines to address scale, species, vegetation, terrain, and system vs. non-system roads would be useful. Road decommissioning (removal of roads from the system for reduction in density) typically has an extremely high up-front cost. Implementation costs and consequences need to be addressed when road density guidelines are presented.

Figure 14. User-created routes near Show Low, Arizona

The forests' transportation system poses risks to riparian areas and water quality because of increased sedimentation and erosion related to poorly maintained roads. There are risks to wildlife from habitat fragmentation and disturbance in reproductive areas. Roads serve as vectors for the introduction and spread of invasive and noxious species. However, the transportation system provides public access to the forests for both non-motorized and motorized recreation. It also contributes to other activities including firefighting, emergency services, forest management, and permitted uses such as firewood gathering.

Forest Plan Need for Change

- Manage for a sustainable transportation system designed to achieve forest management objectives, including public use and enjoyment, while minimizing impacts to the ecosystem.
- Address unmanaged recreation, including identifying areas that are suitable for motorized vehicle travel.
- Modify road density guidelines and clarify how to use at the project level and address the associated costs for meeting these guidelines and standards. Fine tune the road density guidelines based on topography, soil types, land use (i.e., primitive areas versus wildland-urban interface), and other resource concerns.
- Update forest plan direction to reflect new laws, policy, and regulation including the Travel Management Rule.
- Develop plan components focused on eliminating user-created motor vehicle routes.

Other Need for Change

- Inform users so they understand the current administrative methodology and to encourage compliance.
- Emphasize better understanding and management of a sustainable road system for long-term management during project level decision-making.
- Implement improved travel management that includes road maintenance and design.

National Forest System Lands

1987 Forest Plan Desired Conditions (Goals and Objectives)

Acquire lands that are needed for landownership consolidation and improved management efficiency through land exchange, purchase, or donation.

Acquire the road and trail rights-of-way needed to administer the forest and produce resource outputs.

Resolve unauthorized occupancy and trespass.

Administer the Small Tracts Act to best serve the public and the resources.

Manage summer homes and organization camps for the public's benefit.

Administer special uses to best meet public needs.

Minimize the number of electronic sites and utility corridors consistent with appropriate public services that can only be met on forest lands.

Current Conditions and Trends

Land Ownership Adjustment

There are currently 2,111,167 acres within the proclaimed boundary of the ASNFs or 2,018,088 of National Forest System land (U.S. Forest Service 2006b). National Forest System land acreage in the Apache-Sitgreaves National Forests (ASNFs) has increased by 17,757 acres through land exchanges, purchases, and donation. Land exchanges have been the principal means of ownership adjustment for the ASNFs, with approximately 17,540 acres acquired and 4,462 acres conveyed to private ownership since 1987. Many of these land exchanges have involved the transfer of National Forest System lands outside the ASNFs to private ownership, while the ASNFs acquired private lands. Purchase and donation have played very minor roles in the ASNFs' land acquisition program with 215 acres acquired through purchase and the donation for the Alpine Ranger Station (1.59 acres). The primary objective of any acquisition continues to be protection of the environment and improved management of natural resources. Lands acquired are included in the National Forest System and generally enhance public recreational opportunities on the ASNFs.

Conveyance of land from the Forest Service to local governments occasionally occurs in the vicinity of urban areas for school or townsite purposes. Since 1987, 81 acres have been conveyed to local governments.

Property Boundary Location

Approximately 365 miles of ASNFs' boundaries have been located since 1987. Property boundary location involves all activities necessary to identify the boundaries of national forest land, including the search for survey corners, surveying, and marking of land lines, and maintenance of the same. The primary purpose is to ensure that Forest Service activities do not intrude upon non-Federal lands and that trespass upon the national forests can be prevented and controlled. Marking and posting boundaries identifies or locates national forest lands for public

use and enjoyment and so that trespass upon the forests can be prevented and controlled. More frequent inspections and maintenance of property boundaries in areas where residential developments share common boundaries with the ASNFs continues to be a major component of the program.

Encroachments

Numerous conflicts between past surveys have occurred, leading to an unknown number of unauthorized occupancies and use violations on national forest lands. When discovered, a qualifying innocent trespass is resolved using the Small Tracts Act. Since 1987, 12 Small Tracts Act cases, involving 36 acres, have been resolved on the ASNFs. Non-qualifying encroachments and unauthorized trespass are resolved through appropriate means, such as issuance of a required authorization or removal from the forests.

Special Uses

Occupancy and use of national forest lands for public and private purposes through the issuance of special use authorizations and easements, where the use is consistent with natural resource management goals, continues to be allowed. Included are water storage and transmission, water diversions, sanitary systems, electric transmission lines, telephone lines/wireless communication towers, cable television lines, communication sites, oil and gas pipelines, alternative and renewable energy generating facilities, roads and trails, warehouse/storage yards, stockpile sites, research permits, and wildlife management improvements. The demand for non-recreation uses continues to grow, in particular for public road agency needs and access to private land. State agencies, counties, local cities and towns, public utilities, and other service providers regularly request new authorizations or amendments to existing authorizations. Increased requests have been received for private access roads across National Forest System land as residential development has occurred on adjacent private lands.

In 2008 there were over 380 existing rights-of-way and special use permits for a variety of uses on the ASNFs (U.S. Forest Service 2008). This is a decrease of over 100 from 1984 (U.S. Forest Service 1987a). Authorized uses are only minimally administered due to the lack of resources and field personnel. Existing recreation residences are located on the Clifton and Springerville Districts; no permits for additional lots will be issued.

The Energy Policy Act of 2005 directs the Secretaries of Agriculture, Commerce, Defense, Energy, and the Interior to designate energy transport corridors for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities on Federal lands in portions of Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming. The Act further directs that environmental reviews be completed for the designation of such corridors and that the designated corridors are incorporated into the relevant agency land use and resource management plans or equivalent plans. In 2007 the West-wide Energy Corridor Programmatic Environmental Impact Statement was completed as required by the Energy Policy Act. At the time of this writing, no record of decision has been issued. There are three major powerline utility corridors located on the ASNFs.

Status of 1987 Forest Plan

Landownership Adjustment

The time required to complete land exchanges has increased in response to legal and administrative requirements, thereby increasing costs. With reduced funding, fewer land exchanges can be pursued. Proponents of discretionary land exchanges will be required to pay for most, if not all, costs associated with a proposal.

Some residents in local communities have voiced opposition to future conveyance of adjacent Federal lands.

Property Boundary Location

Most land surveys on the ASNFs were originally done in the late 1800s and early 1900s. Some of these original surveys were proven to be of poor quality. Land subdivision and development is increasing the need for accurate and reliable surveys. Identification of property boundaries will become an increasing expense to resource programs, especially fuels treatments. Increasingly, additional expenditures will be necessary in order to fully utilize national forest resources and to prevent claims against the Federal Government. Although land acquisition will eliminate the need for land line location in some areas, many miles of property boundary will still need to be surveyed and posted.

Maintenance of property corners and posted boundary and the forests' land title and survey records all require a commitment of limited funds.

Major changes affecting the lands program have occurred because of the dramatic increase in the purchase of second and retirement homes in the White Mountains. Inspection and maintenance of forest boundaries in areas that abut private lands have not kept up with the increases in private land development.

Encroachments

As land lines are surveyed and maintained, numerous unauthorized activities may also be identified. Considerable effort may be required to resolve these trespasses upon National Forest System lands. Though most will involve simple actions to remove temporary occupancies or activities, some permanent improvements may require other solutions, such as use of the Small Tracts Act. Legal action may also be required in some cases to remove the unauthorized use. Not only are encroachments dealt with when they are found, they must be looked at as protecting the natural resources.

Non-Recreation Special Uses

Staffing levels may continue to be inadequate to meet the increased demand for non-recreation special use requests.

Forest Plan Need for Change

The current forest plan identifies utility corridors. There is a need to update those so that they reflect the Record of Decision for the West-wide Energy Corridor Programmatic Environmental Impact Statement.

Other Need for Change

- In cooperation with counties or local communities, identify lands to be excluded from consideration in future land exchanges.
- Continue to pursue landownership adjustments that will improve management efficiency for both National Forest System lands and intermingled private and State lands.
- Pursue cost share arrangements, whenever feasible, to establish and mark common boundaries.
- Continue to pursue resolution of unauthorized activities as they are identified.
- Implement cost recovery to increase the efficiency and quality of services associated with major permit administration.

Outdoor Recreation

1987 Forest Plan Desired Conditions (Goals and Objectives)

Manage the recreation resource to provide opportunities for a wide variety of developed and dispersed experiences. Provide for developed site and dispersed visitor use.

Where concentrated dispersed recreation conflicts with wildlife or riparian objectives, consider alternative recreation strategies to meet demand.

Maintain and enhance visual resource values by including visual quality objectives in resource planning and management activities.

Maintain a variety of forest trails, considering people's needs. Includes foot and motorized and challenge and adventure opportunities, as well as opportunities for the handicapped.

Continue to integrate the Recreation Opportunity Spectrum (ROS) system into the forest planning process to quantify recreation opportunity changes, guide forest management, and coordinate recreation with other resources.

Establish ORV use areas and closures as needed to meet demand and other resource objectives. Manage ORV use to provide ORV opportunities while protecting resources and minimizing conflicts with other users.

Current Conditions and Trends

Developed Recreation

There are currently 45 developed campgrounds, ranging in size from 4 to 159 single family units, on the Apache-Sitgreaves National Forests (ASNFs). There are also 8 campgrounds for large groups. In response to changing visitor demographics, an additional multi-family and group campground is under construction at Big Lake Recreation Area. Of the 53 campgrounds, 21 do not charge a camping fee. Other developed opportunities on the ASNFs include picnic areas, boating and fishing sites, trailheads, two visitor centers, and scenic overlooks. In the late 1980s the ASNFs awarded concessionaire permits to a private corporation to manage and operate the majority of the developed recreation sites; 31 of the ASNFs' developed campgrounds are currently operated by concessionaire. Since 1990, reservations for developed fee sites could be made through a nationally-contracted reservation system. One developed campground, Fool Hollow, is operated through a partnership with Arizona State Parks.

Nationally, there has been an emphasis on charging fees in an effort to reinvest the monies back into the sites to enhance visitor services and reduce the backlog of recreation facility maintenance needs. Currently, fees are charged at 32 developed campgrounds. Through the Federal Lands Recreation Enhancement Act of 2005, the ASNFs opened their first rental cabin in 2006.

In 1994 the ASNFs evaluated all recreational and administrative facilities for compliance with the Architectural Barriers Act of 1968. The completed survey determined what architectural barriers existed, while the transition plan describes solutions to those barriers. The forests continue to ensure that accessibility needs are met when facilities are upgraded or developed.

Dispersed Recreation

Dispersed recreation is use in concentrated undeveloped sites and other undeveloped portions of the ASNFs. The primary dispersed recreation activities are relaxing and escaping the heat, fishing, hiking, off-highway vehicle (OHV) use, viewing natural features and wildlife, camping, driving for pleasure, picnicking and large group gatherings, and hunting.

Three scenic byways traverse the forests. In September 2005, the 120-mile Coronado Trail National Scenic Byway was recognized by Congress under the National Scenic Byway Program of the Federal Highway Administration. This route has also been a national forest byway and Arizona State scenic byway since 1989. The "From the Desert to Tall Pines Scenic Road" has been a national forest scenic road and Arizona State scenic byway since 1996. Approximately 3 miles of this 67-mile scenic road are on the ASNFs. The 123-mile White Mountain Scenic Road has been an Arizona State scenic byway since 1992 and a national forest byway since 1989.

Recreational Special Use Permits

The ASNFs issue an average if 120 recreational special use permits per year. These permits include outfitter/guide, recreational event, and non-commercial group use. Typical outfitter/guide permits are for hunting or fishing guides, although the number of ecotourism guides has grown slightly.

Visitor Use

The 2002 National Visitor Use Monitoring (NVUM) data show that the ASNFs receive approximately 2 million visitors per year; 58 percent are from Maricopa County. The current "Market Zone" for the ASNFs includes approximately 5 million people, the majority of which live in the Phoenix metropolitan area (including Maricopa County). The NVUM data also shows that forest visitors are typically white (90 percent), male (74 percent) and between the ages of 31 and 70 (63 percent). The under-16 age group constitutes 22 percent of the forest visitors, indicating that families are an important segment of the ASNFs' visitors.

Over half of the forest visitors camp overnight—one of the highest overnight use rates in the National Forest System. Over 35 percent of forest visitors use the developed campgrounds and over 19 percent camped on the forests outside of developed campgrounds. Big Lake, Greer Lakes, and Rim Lakes Recreation Areas are commonly at capacity during the peak summer holiday periods. Traffic congestion and insufficient parking are problems in these areas.

The 1987 forest plan based forest recreation demands on population projections for only Navajo, Apache, and Greenlee Counties. These three counties were considered the "primary zone of influence" (U.S. Forest Service 1987a). There is no comparable visitor use information from 1987.

Trails

The ASNFs have approximately 1,500 miles of trails (U.S. Forest Service 2008a) for hiking, ATV, snowmobile, equestrian, and mountain biking use. Trail conditions are variable across the forests, with maintenance focused on high use trails. The forests have four national recreation trails, all designated in 1979: Blue Ridge, General George Crook, Eagle, and Escudilla. Several trails across the ASNFs are paved to provide more opportunities for visitors with physical limitations.

Off-Highway Vehicles

OHV use, referred to in the 1987 forest plan as "off-road vehicle" (ORV) use, was recognized by the Chief of the Forest Service as one of the four threats to National Forest System lands. The numbers of OHVs across Arizona have risen exponentially. The 1990 Arizona OHV Fuel Study estimated that there were over 500,000 OHVs. In Arizona, sales reports show a steady increase in new OHVs sold between 1995 (3,518) and 1998 (7,531), a 29 percent annual increase (Motorcycle Industry Council, 1998). An Arizona State Parks off-highway use study found that 29 percent of Arizonans surveyed operate OHVs for recreation. Almost 500,000 Arizona households have one or more OHVs. The NVUM data show that 11 percent of forest visitors used OHVs, but only 4 percent identified OHV use as their primary recreational activity.

Approximately 360,000 acres (18 percent) of the ASNFs is currently closed or seasonally restricted to OHV or motorized vehicle use. The remainder of the forests is open to motorized vehicle use, including cross-country travel. The 2005 Travel Management Rule, when implemented, will restrict motorized vehicle use to designated routes and areas.

Recreation Opportunity Spectrum and Visual Quality

Recreation Opportunity Spectrum (ROS) acreages have been modified on a project basis. Monitoring of the forestwide and management area ROS has been limited. Visual quality objectives are also applied on a project basis where forest plan objectives are met. However, the forestwide and management area visual quality have not been monitored.

Recreation Budget

The 1987 forest plan projected an increase in visitor use for most developed sites, but a decline in recreation budgets and efforts to meet the projected demand. This trend of decreasing recreation budgets and rising demand for facilities continues. In 1986, the budget allocation for the recreation, wilderness, trails, and heritage programs totaled $1.8 million. In 2006 the same programs were allocated $1.3 million, a 27 percent decrease. When adjusted for inflation, the forests have experienced a 60 percent decline in budget for these programs.

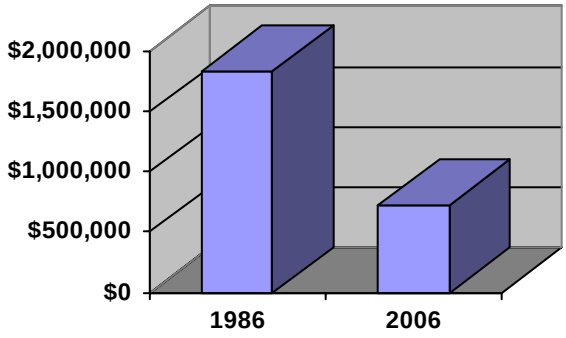


Figure 15. Recreation budget trend (adjusted for inflation)

Deferred Maintenance

In an effort to provide sustainable, well managed outdoor recreation for the health and well-being of individuals, families, and communities, the ASNFs have gone through the Recreation Facility Analysis process and developed a draft action plan. The plan identifies the recreational opportunities people seek from their national forests, and tracks how those needs are changing. The four goals are: (1) provide recreation opportunities consistent with the forest niche; (2) operate and maintain a financially sustainable recreation sites program to nation quality standards; (3) eliminate deferred maintenance at recreation sites; and (4) improve customer satisfaction. The plan recognizes the $2.6 million backlog of deferred recreation facility

maintenance across the ASNFs and proposes to retire the backlog by 2020. The general direction is to close sites with high deferred maintenance costs, low visitor use, or which are out of context with the forests' niche. New construction will be kept to a minimum, unless it will retire deferred maintenance.

Some new construction has taken place since the 1987 forest plan. Most new construction costs have been leveraged with outside grant funding or through a partnership with the Arizona State Parks (Fool Hollow). The most recent capital investment (CIP) is directed toward building a new multi-family and group campground at Big Lake. The 1987 forest plan identified this as a potential developed recreation site. Although this project was planned nearly 20 years ago, the downward trend of construction funding had begun and deferred maintenance retirement had started prior to project implementation. The forests chose to implement the CIP based on the need for these types of developed sites in the Big Lake Recreation Area. Future CIP priorities are directed at retiring the backlog of deferred maintenance, meeting current codes and standards for wastewater and drinking water systems, and meeting accessibility standards.

Status of 1987 Forest Plan

In general, the facility construction needs outlined in the 1987 forest plan have been completed. The proposed Pigeon Creek and Phoenix Park Wash reservoir developments were found to be infeasible. The Phoenix Park Wash proposal was dropped because of declining budgets and limited water resources in the area. Most of the direction related to facility and capital investment projects is outdated. The ski area proposals were dropped because of declining water and snow resources, declining budgets, and lack of interest from outside proponents.

The ASNFs' recreation opportunities and management contribute in many ways to the economy and social climate. Revenue earned through the concessionaire program supports individuals living in the analysis area. Non-direct economic contributions extend to purchases that support the recreational activities, including equipment, gas, food, lodging, and fishing and hunting licenses. Recreation and wildlife-related activities on the ASNFs contribute approximately $44.6 million to the local economies (U.S. Forest Service 2007).

Socially, the recreation opportunities contribute to the overall well-being of the forest visitors through physical exercise, experience in the outdoors, and opportunities for solitude and to connect with nature. Facility development contributions allow for protection of resources by hardening sites, limiting access in some heavy use areas, and managing human waste and wastewater.

Risks continue to revolve around the downward budget trends. These trends lessen the opportunity for facility maintenance, both preventive and deferred, and limit Forest Service on-the-ground presence and interaction with forest visitors. Limited facility maintenance increases the ASNFs' risk of personal injury and liability, for both forest visitors and employees. Deferred maintenance needs increase with the deterioration of facility infrastructure. Less frequent Forest Service interaction with forest visitors can increase noncompliance with forest policies and regulations and contribute to a loss of Forest Service identity.

The Forest Service has identified a national role in providing recreation, which is "nature-based, dispersed recreation, including undeveloped settings, built environments, and wildland settings that complement enjoyment of special places." The ASNFs have described their special places

and unique niche. The concept of describing a niche is to align facilities and programs to the specific forests' niche. Some recreation activities may not be compatible with the ecosystem or are inappropriate with the desired social settings. Each special place or national forest cannot provide for every recreation activity. This place-based approach attempts to address sustainability and capacity.

Forest Plan Need for Change

- Better describe the desired conditions for the ASNFs' recreation program, both developed and dispersed. Consider increasing populations, changing demographics, and the associated demands for recreation opportunities while protecting sensitive environmental features.
- Address wildland-urban interface recreation demands (trailheads, urban uses, and general access).
- Identify areas that are suitable for various types of recreation.
- Add direction for dispersed recreation opportunities that are not addressed in the forest plan, such as scenic byways.
- Consider recommending areas that have high-density, highly-developed recreation settings for special area designation; specifically Greer Lakes, Big Lake, Black River, and Rim Lakes recreation areas.
- Ascertain and validate current forestwide and management area visual quality objectives. Convert planning direction to the Scenery Management System terminology.
- Ascertain and validate current forestwide and management area ROS.
- Develop general guidelines for addressing and responding to new recreation uses and technology.
- Remove direction related to downhill ski areas.
- Remove specific direction for the General George Crook Historic Trail.
- Emphasize accessibility for persons with disabilities.
- Update the facility and capital investment projects direction.

Other Need for Change

- Implement Recreation Facility Analysis decisions, when completed. This will provide direction on facility and capital investment projects, determining recreation densities and focus in various areas, and address urban, developed, and dispersed demands.

Rangeland Management

1987 Forest Plan Desired Conditions (Goals and Objectives)

Provide a program of range management that emphasizes high quality range forage and improvements. Benefits are improved watershed conditions, improved range forage production, improved wildlife habitat, and enhanced visual quality.

Current Conditions and Trends

Forestwide Range Management

The Apache-Sitgreaves National Forests (ASNFs) are charged with complying with numerous laws. In order to meet these requirements the ASNFs have completed National Environmental Policy Act (NEPA) allotment management analyses on 96 grazing allotments since 1991 (figure 16). These analyses encompass nearly 1.7 million acres. Compliance with Federal laws on this large acreage has generated concerns from ASNFs' users (primarily grazing permittees), because livestock reductions have been necessary to balance livestock numbers with grazing capacity in order to meet 1987 forest plan goals and objectives. All of the completed NEPA decisions highlight that additional or changing management is needed to improve watershed and soil conditions, improve range forage production, improve wildlife habitat, and enhance visual quality.

Thirty-two grazing allotments are still in need of NEPA analysis and decisions. Analysis is necessary to bring term grazing permits into compliance with 1987 forest plan standards and guidelines and with environmental laws. These allotment analyses must be completed by 2010, as required by the Rescission Act of 1995 (Public Law 104-19). This act directed the Forest Service to establish and adhere to a schedule for analysis and decisions on all allotments where NEPA compliance is required.

The ASNFs continue to develop allotment management plans (AMPs) that are consistent with forest plan direction of balancing livestock numbers with grazing capacity, that allow ecosystems to reach the desired conditions described in the site-specific AMP and that are consistent with current social values and people's desires. Each decision incorporates a planned monitoring protocol to insure that the decision implements the goals and objectives of the analysis. Due to funding constraints and higher priorities, it has been difficult to implement monitoring plans, including those required by formal consultation with the U.S. Fish and Wildlife Service. Overall, the limited monitoring results have not shown improvements in rangeland conditions.

Priority for grazing analysis focused on those allotments with riparian and aquatic species protected under the Endangered Species Act and, secondly, on those where watershed and riparian conditions were less than satisfactory. In many cases forest plan objectives for watershed and riparian areas are being met; nevertheless, many watershed and riparian areas still remain in unsatisfactory condition. Livestock number reductions, collectively, indicate that some allotments had very large percentage reductions in permitted numbers, while others had relatively small changes. These changes were based, primarily, on the soil capability assessment (figure 17) and

on balancing permitted livestock numbers with allotment capacity[2]. As directed by the forest plan, basic allotment analysis would evaluate grazing capability[3] (figure 17), determine, and map which lands are suitable and unsuitable for livestock grazing. No grazing capacity would be assigned to lands determined to be unsuitable for grazing, and where appropriate, grazing would be eliminated from unsuitable lands.

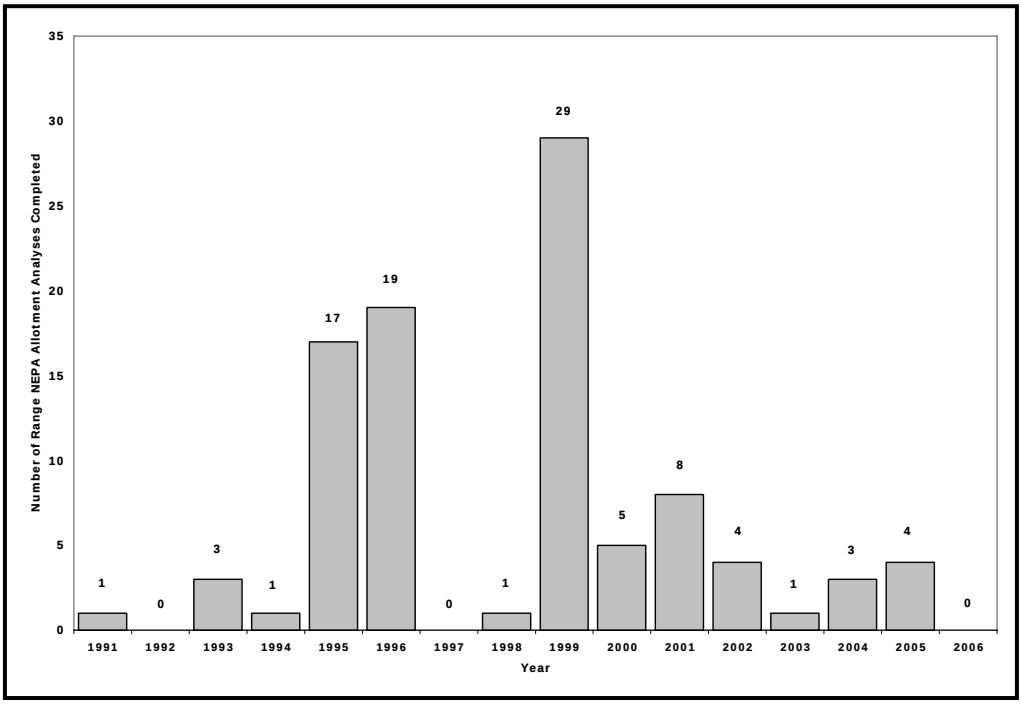


Figure 16. Number of NEPA analyses dealing with livestock grazing completed, by year, since the forest plan was approved in 1987

In 2000, a forest plan supplemental monitoring report detailed adjustments to the expected output of livestock grazing from 204,000 animal unit months (AUMs) in the 1987 forest plan to roughly 79,000 AUMs. This adjustment reflected the numerous changes to individual grazing allotments from 1995 to 2000. These changes were based on the following:

- Allowable use levels in the 1987 forest plan were closer to 50 percent of forage production. This factor was reduced in recent AMPs.

[2]Estimated forest plan livestock grazing capacity was also loosely tied to transitory range production anticipated as a result of the projected timber harvest program (USDA-FS 1987).
[3]*Full Capability* areas are those that can be used by grazing animals under proper management without long-term damage to the soil resource or plant communities. Typically, these areas have stable soils and vegetative ground cover is maintaining site productivity and producing a minimum of 100 pounds of dried forage per acre per year. Soil loss, as judged by available techniques, is within tolerance. *Potential Capability* areas are those that could be used by grazing animals under proper management but where soil stability is impaired or range developments are not adequate under existing conditions to obtain necessary grazing animal distribution. Generally, these areas have impaired soil stability, steep terrain, lack water and access and/or there is insufficient vegetative ground cover to protect the soil, and are producing less than 100 pounds of dried forage per acre per year but if treated, developed, or managed properly could become fully capability. *No Capability* areas are those that cannot be used by animals without long-term damage to the soil resource or plant communities or are barren or naturally unproductive. These areas are not capable of being grazed by domestic livestock under reasonable management goals. Grazing capacity is not assigned to these areas, even though light livestock use may occur (USDA-FS 1999).

- Allowable use by range condition class reduces the amount of forage committed to livestock grazing.
- A portion of forage in some allotments is specifically allocated to wild ungulates.
- More vegetation is committed to achieve watershed protection.
- Provision for more forage available to wildlife; directly to herbivores and indirectly to predators, such as northern goshawks.
- Production estimates in the 1987 forest plan included a substantial emphasis on timber harvest with grass seeding to increase forage for wildlife and livestock.
- Lack of forage production projects such as piñon-juniper treatments with grass seeding.
- Continued in-growth of forest and woodland canopies which suppress herbaceous species.

Grazing permit administration receives continued close scrutiny from groups concerned with direct and indirect effects of grazing on threatened and endangered (T&E) species. Grazing decisions are frequently appealed. Regionwide litigation has claimed that required monitoring has

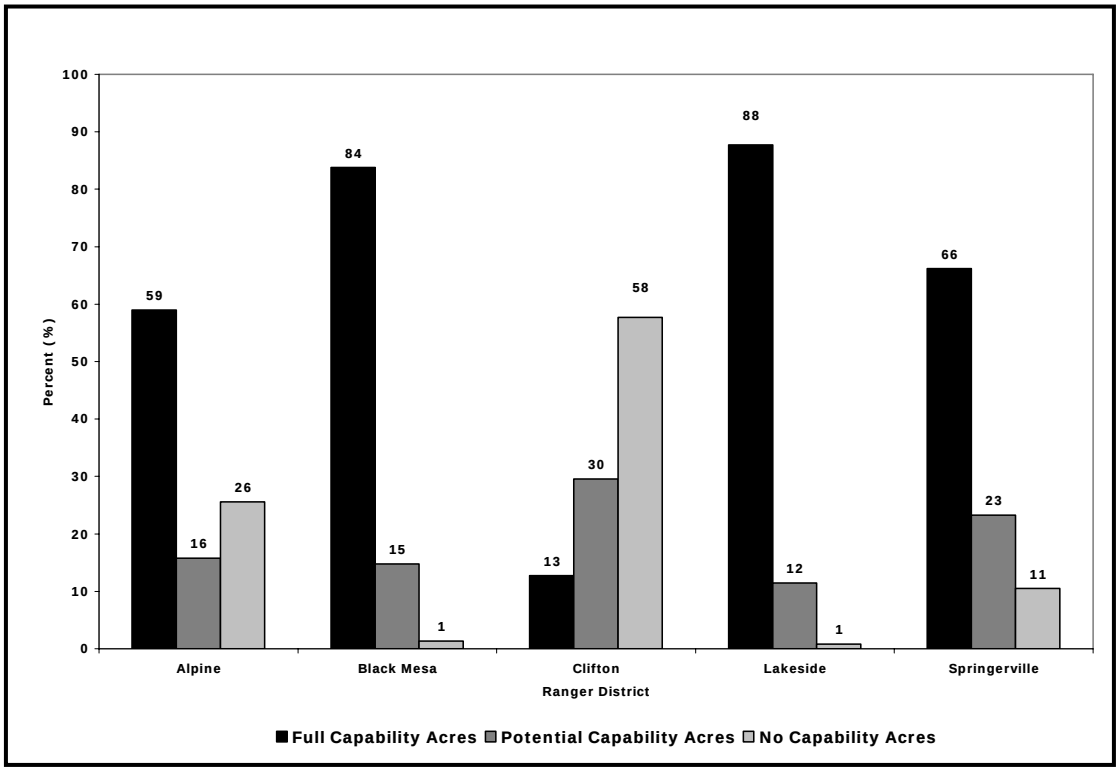


Figure 17. Percentage of grazing capability acres by Ranger District (derived from terrestrial ecosystem survey data [Laing et al. 1987]) Soil capability is directly related to soil stability (erosion rate) and is dependent upon the interrelationship of the soils, plants, and animals.

not been adequately implemented. Riparian areas in many pastures with T&E species have been fenced or cattle are excluded from the pastures during critical periods in the plant species life cycle, however, many unfenced riparian areas are still negatively affected by grazing. Wildlife

needs have been considered when establishing livestock grazing capacity. Additionally, livestock grazing was suspended or delayed in some pastures where there were conflicts with recreational use.

Improvements continue to be made in livestock management on the forests. Many sensitive areas that were grazed in 1987 are now within exclosures or rested pastures. Wildlife needs are recognized during range analyses and rangeland conditions are slowly improving in some areas. Drought conditions since the mid 1990's have drastically reduced the ASNFs' ability to bring about greater change and the forests' options for dealing with problem areas. While most permittees are willing to incorporate new and innovative management strategies, a few sporadically operate outside of their annual operating instructions (AOI).

In most cases, permitted livestock use is consistent with and in compliance with the term grazing permits and AMPs; however, non-compliance with the AOI does occur. Actual use by permitted livestock numbers and wildlife populations are allowed to fluctuate with on-the-ground conditions, reflecting various conditions that may occur, such as drought, wildfires and/or reduced forage production, and still allow ecosystems to advance toward the desired conditions described in specific AMPs. In most cases, grazing allotments with NEPA decisions are stocked with the proper number and class of permitted livestock and desired wildlife populations are maintained without unacceptable degradation of other resources and uses. Occasional degradation occurs in localized sensitive habitats.

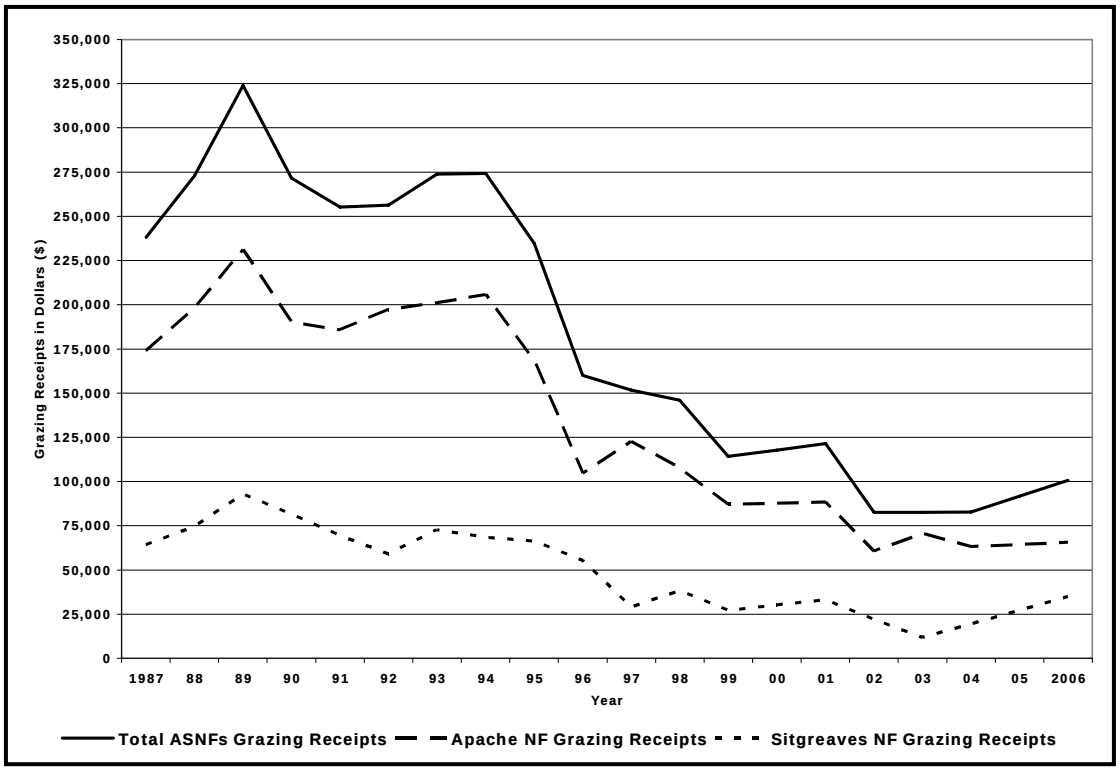


Figure 18. ASNFs annual grazing receipts from public land ranching on the ASNFs from 1987 to 2006 (from FS records)

One objective of the range management program on the national forests is to contribute to the economic and social well-being of people by providing opportunities for economic diversity and by promoting stability for communities dependent on range resources. Rangelands in the United States have been used for livestock grazing since the expansion and settlement of the Western frontier. Ranchers have grazed livestock on public lands managed by the Forest Service and its predecessor since the late 1890s.

Livestock grazing contributes to the livelihood of the permittees and to the economy of the local communities and counties (Figure 18). In 2003, there were 159 grazing permits on ASNFs' lands in Apache, Greenlee, Navajo, and Coconino Counties. Prior to 2001, payments to counties from Forest Service receipts (the 25 Percent Fund) included grazing fees paid by livestock permittees to utilize National Forest System lands. The grazing fee, which is adjusted annually according to a formula in the Public Rangeland Improvement Act of 1978, is currently at $1.35 per head month (HM)[4]. Since 1987, the annual grazing fee has averaged $1.57 per HM, ranging from a high of $1.97 per HM in 1990 to a low of $1.35 per HM in 8 out of the past 21 years. Figure 18 displays the yearly livestock grazing receipts collected by the ASNFs since the forest plan was approved.

Grazing revenues have declined over the past 21 years due to several factors, including balancing permitted livestock numbers with allotment capacity, extended drought and subsequent reduced stocking levels, and the large Rodeo-Chediski Fire of 2002. Approximately 38 percent (173,000 acres) of this fire was on the ASNFs and livestock grazing was suspended for a time until the soil, vegetation, and forage resources recovered.

The level of employment directly and indirectly supported by a livestock operation is assumed to be 1.14 jobs per 100 animal years or 0.00095 jobs per AUM (figure 19) (this job index was developed by the Southwestern Regional Office of the Forest Service, in 1995 for the 1995 permit issuance process). According to ASNFs' data, livestock grazing on the forests generates approximately 0.3 percent of the labor income and roughly 2 percent of employment within the six counties (Apache, Coconino, Greenlee, and Navajo Counties in Arizona and Catron and Grant Counties in New Mexico) surrounding the ASNFs. It should be noted that the ASNFs' contribution represents only a portion of the economic and employment activities reflected in the natural resource related sectors. Also, within individual counties and communities, dependency on natural resource industries may be greater.

The budgetary evaluation of grazing on the ASNFs does not reflect the contribution of grazing to the quality of life in rural communities as well as the contribution to individual ranchers' quality of life. This social environment is perhaps the most diverse and emotionally charged arena in ecosystem management. The social environments for this evaluation not only comprise the immediate people living in and adjacent to the ASNFs, but also the greater body of citizens and taxpayers residing throughout the United States. Forest resources play an important social role for

[4] Head Month: For grazing fee purposes, a head month (HM) is a month's use and occupancy of rangeland by one weaned or adult cow, bull, steer, heifer, horse, burro or mule, or five sheep or five goats (FSM 2238.05). Grazing fees are calculated by: [number of head (animals) being grazed] X [number of month in grazing season] X [grazing fee per head]. According to (USDA-FS 1999), a head month is not synonymous with either an animal unit (AU) or animal unit month (AUM). An AU is considered to be one mature (1,000 pound) cow or the equivalent based upon average daily forage consumption of 26 pounds of dry matter per day (FSH 2209.15). An AUM is the amount of feed or forage required by an AU for 1 month (USDA-FS 1999). The AUM in the Forest Service is a reporting item only (USDA-FS 1992).

the people of Apache, Coconino, Greenlee, and Navajo Counties in Arizona and Catron and Grant Counties in New Mexico, as well as the greater body of citizens and taxpayers throughout the United States.

Complying with the numerous environmental laws and the myriad of laws that provide the authority and direction for public land management passed by Congress addresses the social desires of the greater body of citizens and taxpayers of the United States. The goods, services, and uses provided by the forests represent major components in the lives of many residents within the immediate area and the many visitors to the ASNFs. Although at reduced levels, livestock grazing remains one of the major management focuses of the ASNFs. In addition, the social customs, culture, and traditions of the ranching lifestyle continue and are maintained and supported by the current forest plan direction.

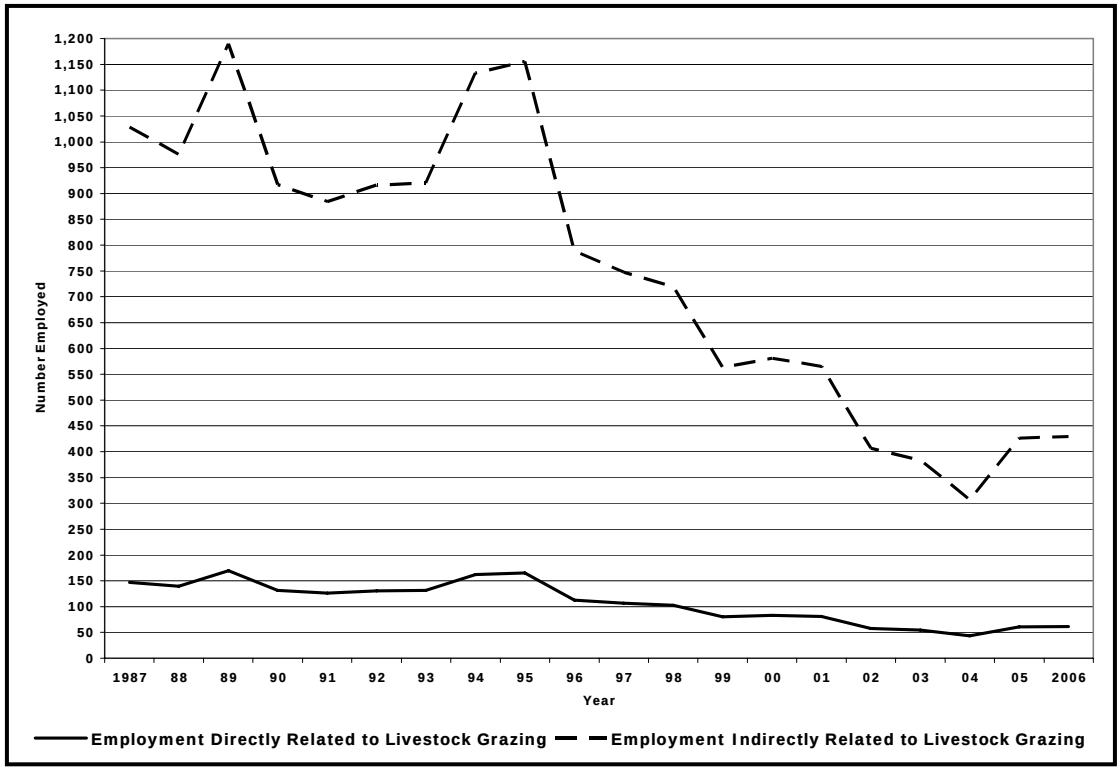


Figure 19. Estimated employment levels directly and indirectly related to livestock grazing on the ASNFs since the forest plan was approved in 1987 (Job index developed by Southwestern Regional Office for the 1995 permit issuance process).

Wilderness Area Range Management

Forest plan direction for grazing within wilderness areas is that any adjustments in the numbers of livestock permitted to graze should be made as a result of revisions in the normal grazing and land management planning and policy setting process, giving consideration to legal mandates, range condition, and the protection of the range resource from deterioration.

At the time the 1987 forest plan was approved, livestock grazing was permitted within the Bear Wallow, Escudilla, and Mount Baldy Wilderness areas. However, these wildernesses are not currently being grazed by livestock. The circumstances behind this are as follows:

Bear Wallow Wilderness: The pasture (KP Summer) that contains Bear Wallow Wilderness was waived back to the Forest Service in November 2001. The limited amount of forage has not been reallocated. This wilderness also contains the North and South Forks of Bear Wallow Creek, an Apache trout (*Oncorhynchus gilae apache*) recovery stream. Apache trout are listed as threatened under the Endangered Species Act.

Escudilla Wilderness: The "Decision Notice and Finding of No Significant Impact for the South Escudilla AMP" (dated February 13, 2001) removed grazing from Escudilla Wilderness. Removal was based on limited forage and water availability, dense timber, conflicts with recreational users, presence of wild ungulates and predators, and limited access and ability to manage and gather livestock. Under this decision, the proposed Escudilla Research Natural Area was also excluded.

Mount Baldy Wilderness: The "Decision Notice and Finding of No Significant Impact for the Greer AMP" (dated March 23, 1999) removed grazing from Mount Baldy Wilderness. Removal was based on Arizona willow protection (high cost, maintenance, and visual effects of fences), limited forage availability, and conflicts with recreation and riparian resource values.

Sandrock Allotment: The Sandrock Allotment (61,348 acres) was deferred from grazing in December 1983. The purpose of the deferment was to accelerate watershed recovery. Range status data used in forest plan development indicated that this management area was not assigned any grazing capacity. Management emphasis was directed toward the recovery of this critical watershed. In addition, management was also to emphasize the loach minnow (*Tiaroga cobitis*) and black hawk (*Buteogallus anthracinus*) and their habitats. New inventories were to be used to make future adjustments to this management area's range status description. As a result the 2000 forest plan supplemental monitoring report, the range capability of the allotment was determined to have 4 percent full capacity, 26 percent potential capacity, and 71 percent no capacity soils acres. Monitoring has not shown improvement or movement toward desired conditions.

Status of 1987 Forest Plan

The desired conditions for the range management program are still valid.

A 1992 study of the southeastern portion of the Coconino National Forest and the western portion of the ASNFs (Hanes 1993) concluded that current range conditions are largely a result of overgrazing around the turn of the 20th century. Though improvements have been made in livestock management on the forests and in range conditions, the range conditions are largely irreversible without massive inputs of materials, energy, time, and money. Currently, the ASNFs have conducted range analyses on about 90 percent of the forests, where livestock numbers have been largely balanced with capacity. Small localized areas continue to be impacted by a combination of livestock and wildlife grazing. Livestock have been removed from campgrounds and major river systems such as the San Francisco, Black, and Blue Rivers. A few small streams continue to be impacted by direct grazing; direct and indirect impacts to wildlife and T&E species have been reduced but not eliminated.

Grazing management is an ongoing activity and is the foundation of grassland-based livestock production since it directly effects both animal and plant health and productivity. Grazing animals have a unique relationship with the environment in that, while foraging, they remove that part of their environment that makes their very presence on a particular range possible. Intensity, frequency, and season of use are the main factors involved in defoliation impacts on plants. If selective grazing pressure is excessive, the balance of species' coexistence is upset and a competitive advantage is afforded to less palatable species, which changes species composition, structure and function. The ecological risks to sustainability of livestock grazing can be summed as follows:

- Alteration of species composition of communities, including decreases in density and biomass of individual species, reduction of species richness, and changes in community organization.
- Disruption of ecosystem functioning, including interference in nutrient cycling and ecological succession.
- Alteration of ecosystem structure, including changing vegetation stratification, contributing to soil erosion, and decreasing water availability to biotic communities.

Grazing management needs to be extremely flexible and responsive because it is dependent on changing environmental conditions, such as drought, fire, and subsequent forage production, and has the potential to adversely affect plant health, soil and watershed conditions, wildlife habitat, recreational opportunities, and visual quality. The current forest plan utilizes the measurement of range condition to express the health of the range vegetation and soil. According to the *Region 3 Rangeland Analysis and Management Training Guide,* there is a need for change the way the forests collect range data and use that data for determining grazing management schemes by utilizing Ecological Condition Classification.

The desired condition to balance permitted use with capacity is still valid, but the 1995 date for completion has not been met. Overstocking and over-utilization of the vegetation resource is a risk to sustainability. Balancing forage demand, from both livestock and wildlife, with forage supply is one of the first priorities for proper range management where long-term productivity and ecological sustainability of the vegetation resources are the goals.

Livestock grazing has been identified as one of the primary threats to ecological sustainability for the majority of the vegetation types that occur on the ASNFs; spruce-fir forest is the only exception. Without appropriate range management, environmental conditions will not improve and may even decline. Improperly functioning environmental conditions ultimately limit the social enjoyment and economic opportunities derived from the forests.

Forest Plan Need for Change

- Review and update direction for areas that are generally suitable for livestock grazing.
- Remove references to Range Condition and conform to latest regional direction for assessing rangeland health.

Other Need for Change

- Continue to balance permitted use with grazing capacity.

- Complete NEPA allotment analyses and develop Allotment Management Plans (AMPs) that comply with current law, regulation, and policy and that reflect and respond to changing resource conditions.
- Update existing AMPs based on comprehensive and effective monitoring. To minimize risks to sustainability of livestock grazing, management should emphasize the following:
    - Allow for establishment and maintenance of functionally protective ground cover.
    - Minimize loss of water through runoff.
    - Minimize loss of soil by water and wind erosion.
    - Provide deferment of use or periods of rest to meet specific requirements of the forage species to promote seed production, plant reproduction, establishment of new plants, and restoration of vigor in older plants.
    - Provide flexible management systems that are responsive to environmental conditions and/or monitoring.
- Manage Bear Wallow, Escudilla, and Mount Baldy Wilderness areas without livestock grazing to avoid conflicts with other forest resources.
- Maintain current status of the Sandrock Allotment until desired conditions have been achieved.
- Implement livestock management emphasizing proper timing, intensity and duration on appropriate areas.

Research Natural Areas and Botanical Areas

1987 Forest Plan Desired Conditions (Goals and Objectives)

Manage RNAs for scientific research or baseline studies. Protect potential RNAs pending implementation.

Manage specifically designated areas according to the enabling orders and to protect their special qualities.

Current Conditions and Trends

The Apache-Sitgreaves National Forests (ASNFs) have one research natural area (RNA), Phelps Cabin (designated in 1970), and four proposed RNAs: Thomas Creek, Escudilla Mountain, Wildcat, and Hayground. RNAs are designated by the Regional Forester with concurrence of the Forest Service Research Station Director (FSM 4063) and are intended to protect small parcels of unique ecosystems across the United States. RNAs are established to represent the average conditions of extensive ecosystems, not to protect a locally unique area. Therefore, each RNA is nationally unique. These areas are often set aside to serve as controls for comparison to treated areas. The Phelps Cabin RNA represents montane grassland.

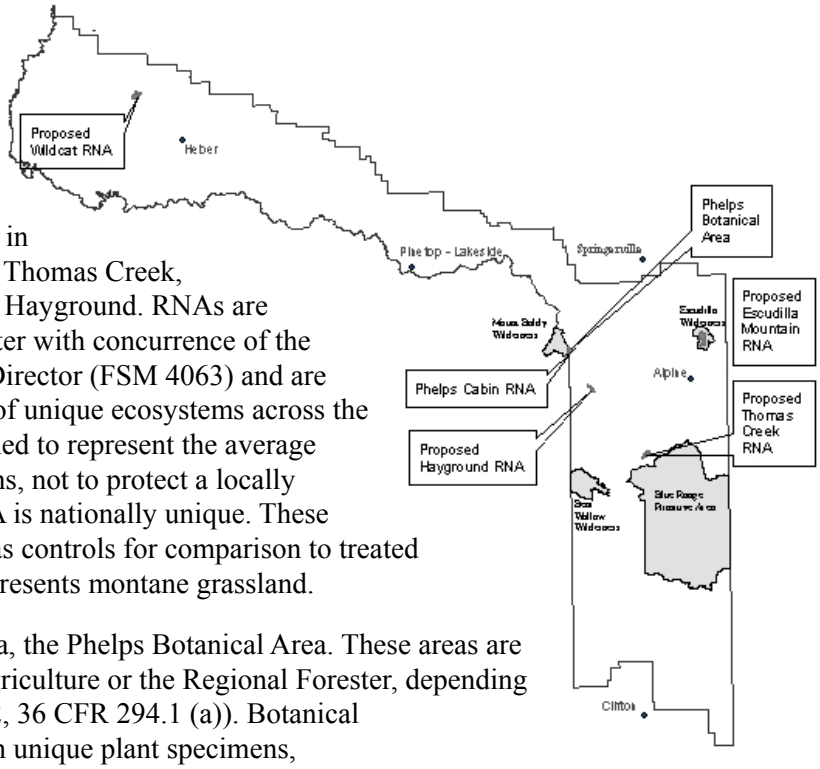


Figure 20. Location of RNAs and botanical area on the ASNFs

The ASNFs has one botanical area, the Phelps Botanical Area. These areas are designated by the Secretary of Agriculture or the Regional Forester, depending on the size of the area (FSM 2372, 36 CFR 294.1 (a)). Botanical areas are units of land that contain unique plant specimens, communities, habitat or ecology deemed worthy of special protection. The Phelps Botanical Area is located along the East Fork Little Colorado River, partly within the Phelps Cabin RNA, but outside the Mount Baldy Wilderness. Remnants of fencing still exist, but are in disrepair. The fence was not built on the official botanical area or Phelps Cabin RNA boundaries. Currently, Federal Highway 273 is the functional pasture boundary; areas upstream of the highway are not grazed, making fencing unnecessary for livestock management. Considerable impacts from elk grazing, rubbing, and trampling are evident on riparian woody species. Because the area gets extensive fishing and recreational use, trails along the creek have disturbed vegetation and soils

Status of 1987 Forest Plan

The intent of RNA and botanical area management is centered on excluding anthropogenic disturbance and allowing natural ecological processes to guide succession. In order to reduce impacts, fencing is needed to control ungulate use and signing is needed to inform the public of

the areas' purposes. The purposes and intents of these designated areas have been seriously compromised, because fencing and signing have not been maintained.

Forest Plan Need for Change

There is a need to re-evaluate the continued need for the four proposed research natural areas. If appropriate, retain in the plan and pursue designation.

Other Need for Change

- Develop a Phelps Botanical Area plan.
- Administration of RNAs and botanical areas needs to support existing objectives, intentions, and programs pertaining to such areas.
- Assure efficiency in administration and management of these areas.
- Prevent future unauthorized use within these areas, manage or minimize disturbance.
- Construct and maintain fencing and signing on official boundaries.
- Rehabilitate areas that have been disturbed by game trails and equestrian and foot traffic. Install structures where needed to protect the site from disturbance or impacts of anthropogenic origin.

Riparian and Wetland Resources

1987 Forest Plan Desired Conditions (Goals and Objectives)
Improve vegetation condition in riparian areas. This is an emphasis area for the plan. Improvements will be accomplished by reducing, or in some cases, eliminating adverse impacts from grazing, vehicles, and overuse by man.

Current Conditions and Trends

Additional information on conditions, trends, and need for change can be found in the Ecological Sustainability Report.

Other Need for Change

- An accelerated program of riparian improvement is needed to show progress over the planning period of the new forest plan. It is expected that proper functioning condition (PFC) cannot be achieved in all areas over this time period. However, conditions should improve.
- Utilize PFC as the current protocol to determine riparian condition for the ASNFs.
- Improve riparian and wetland areas in less than PFC, either directly or through project implementation or mitigation measures. Improvements will be accomplished by reducing or eliminating adverse impacts. Track accomplishments.
- Use only native riparian species for restoration work, preferably genotypes native to the ASNFs. Occasionally, nonnative species have been used in restoration work. Continue relationship with Plant Material Center.
- Ensure riparian and wetland goals and desired conditions are incorporated into site-specific project NEPA analyses and silvicultural prescriptions. Provide adequate monitoring to track changing conditions during implementation. Show quantifiable improvement within a reasonable timeframe (5 to 10 years).
- Continue PFC assessments of riparian and wetland conditions across the ASNFs in order to provide a more complete inventory of this critical resource. Update and complete riparian and wetland assessments within specific project areas. Ensure location data, forms, photos, and ancillary data are complete and kept together in electronic spatial and tabular data bases.
- Continue to work with AZGFD to determine and quantify impacts from elk.
- Reassess road maintenance activities to determine if changes can occur that will further reduce sediment into stream and riparian areas.
- Adjust watershed and riparian management to improve conditions.

Soil and Watershed Condition, Water Quality

1987 Forest Plan Desired Conditions (Goals and Objectives)

Maintain, or where needed, enhance soil productivity and watershed condition. Put all areas in a satisfactory watershed condition by 2020. Maintain a high quality sustained water yield for forest users and others. Identify and protect wetlands and flood plains.

Current Conditions and Trends

Additional information on conditions, trends, and need for change can be found in the Ecological Sustainability Report.

Soil and Watershed Condition

Management activities that historically have impacted soil and water resources include timber harvest and associated transportation systems, livestock grazing, recreation activities including off-highway vehicles and camping, and fire suppression and fuels management practices. In 1987, 34 percent of the Apache-Sitgreaves National Forests (ASNFs) were in treatable, unsatisfactory watershed condition. Commercial forest land was generally in satisfactory condition, although timbering activity within harvest units and road use and maintenance still had the potential to impact conditions in localized areas. Since that time, forestwide implementation of soil and water conservation practices (also known as best management practices or BMPs) for all projects has mitigated much of these activities' impacts. Recently, a new set of BMPs was established to mitigate impacts generated from implementation of the White Mountain Stewardship Project (WMSP) contract, as well as implementing monitoring protocols for disturbance and compaction on current activities.

Much of the areas within the lower elevation grasslands and woodlands were in unsatisfactory condition in 1987, and continue to be so, especially in areas where overstory canopies are greater than 20 percent. The goal of restoring watershed condition from the 1987 forest plan was loosely tied to implementation of grazing allotment management plans (AMPs) that allowed for the adjustment of livestock stocking being within the permitted use or carrying capacity for the allotment and adding a lag time of 2 to 3 decades to meet the objective. To date, (after 2 decades) 75 percent of grazing allotments have been adjusted and intensive grazing management has been applied (see "Range Management" section). In addition to these, additional allotments (such as some on the Clifton Ranger District) are closed, not stocked or have reduced stocking through agreements with permittees for resource protection purposes until AMPs are completed. Improvements in ground cover and plant species diversity have been documented in areas where improved management is being implemented.

Watershed improvement projects funded with appropriated dollars have shifted from intensive riparian and stream improvement structural projects in the early 1990s to more broad scale non-structural projects, including piñon-juniper overstory reduction and grass reseeding. The ASNFs have averaged approximately 300 acres treated per year since 1987. Project funding from agency sources is being reduced. However, the monies the forests receive are routinely leveraged with cost-share grants or agreements to increase the treatment extent and effectiveness.

Large fires have had dramatic effects on soil and watershed condition since 2002. The Rodeo-Chediski Fire burned about 173,000 acres of Forest Service land, including 45,000 acres that was in high soil burn severity condition. After the Rodeo-Chediski Fire, the ASNFs spent over $10 million in emergency watershed treatments and an additional $3 million in long-term rehabilitation projects. The forests also spent approximately 1.5 million dollars in emergency treatments on seven large fires of mixed burn severity (51,000 acres). Treatments included seeding, mulching, road and trail stabilization, and replacement of fencing for livestock control. Livestock grazing is deferred from the fire areas until adequate recovery of stabilizing ground cover is documented. As the forests enter their 12th year of below normal precipitation and with most of the forest types (>85 percent) in Fire Regime Condition Classes (FRCC) 2 and 3 (LANDFIRE Rapid Assessment), the trend toward large, high burn severity fires will continue.

Water Quality

Water quality in streams within the ASNFs is regarded as good to excellent. Protection of water quality is a goal of the ASNFs, as is complying with Clean Water Act (CWA) provisions. The forests work closely with the Arizona Department of Environmental Quality (ADEQ), the agency promulgated to administer the CWA. The ASNFs and the ADEQ are currently working under a 1990 memorandum of understanding (MOU) that binds both agencies with responsibilities for the protection of water quality for the designated uses on national forest lands. The following table describes the stream reaches or lakes that are currently impaired and waiting total maximum daily load (TMDL) studies or have had TMDL assessments completed where corrective action has been implemented. Some streams initially met Arizona standards, but were added to the list by the Environmental Protection Agency (EPA) after they reviewed Arizona's data. Other parameters that have exceeded State standards, but lack sufficient data, are also included.

Table 2. ADEQ and Environmental Protection Agency (EPA) impaired streams and water bodies on the ASNFs

Surface Water Description	Size	Causes of Impairment and Status	Status of TMDL	Planning List Exceedence
Blue River from Strayhorse Creek to San Francisco River	25.4 m	Exceedences of Escherichia coli bacteria criteria may represent a public health concern if people are swimming or wading.	Initiate in 2008 and complete in 2010.	Suspended sediments
San Francisco River from Blue River to Limestone Gulch	18.7 miles	Exceedences of Escherichia coli bacteria criteria may represent a public health concern if people are swimming or wading.	Initiate in 2008 and complete in 2010	Mercury Suspended sediments
San Francisco River Headwaters to New Mexico Border	13.1 miles	EPA added for sediment in 2004	Medium priority for assessment – TMDL not scheduled	Dissolved oxygen, but determined to be a natural condition.

Surface Water Description	Size	Causes of Impairment and Status	Status of TMDL	Planning List Exceedence
Bear Canyon Lake	35 acres	pH - Determine if lake meets narrative nutrient criteria once narrative nutrient implement procedures are adopted EPA listed due to low pH in 2004.	Initiate if supporting data is acquired	Dissolved oxygen
Nutrioso Creek from headwaters to Little Colorado River	13.3 miles	Turbidity – continue effectiveness monitoring for TMDL implementation strategies.	Turbidity TMDL approved in 2000	Delisted for turbidity and suspended sediments in 2006
Rainbow Lake	1,170 acres	Nutrients (N and P) and pH. Low lake level. Determine if lake meets narrative nutrient criteria once narrative nutrient implement procedures are adopted.	Nutrient narrative TMDL was approved in 2000	
Little Colorado from West Fork to Water Canyon	19.8 miles	Turbidity – continue effectiveness monitoring for TMDL implementation strategies. Recommend biocriteria assessments on bottom deposits when adopted.	Turbidity completed in 2002	Dissolved oxygen
Crescent Lake	155 Acres	EPA listed due to high pH in 2002	Initiate if supporting data is acquired	pH
Luna Lake		Nutrients (N and P), pH, and dissolved oxygen. Low lake levels. Determine if lake meets narrative nutrient criteria once narrative nutrient procedures are adopted.	TMDL completed 2000	Lead

As a part of the ADEQ MOU, the ASNFs are responsible for the formation, implementation, and monitoring of site-specific BMPs for all projects that may affect water quality. BMPs have been applied to grazing, timber, recreation, roads, fuels management, special uses, and other projects. With implementation of the WMSP contract, the forests became aware that traditional timber sale BMPs were not adequate for mitigating the effects of entirely mechanized biomass removal operations, where wheeled or tracked equipment drive over more of the treatment area. As a

result, new BMPs were developed that included establishment of equipment restrictions for streamside management zones for perennial, intermittent, and ephemeral drainages. BMP monitoring has also been resumed. Soil compaction monitoring began in 2007.

Roads have been identified as the largest sediment contributors to stream systems on national forest lands. The forests are working toward improvement of system roads through travel management trust funds, grants, and appropriated funds. Identification and obliteration of unauthorized or "two track" roads and the decommissioning of unneeded roads will reduce sediment and protect water quality. The concurrent travel management planning effort will identify the need for change.

The following "unique waters," as designated by ADEQ, are afforded extra protection through state anti-degradation rules: Lee Valley Creek, Bear Wallow Creek, Hay Creek, North Fork Bear Wallow Creek, Snake Creek, South Fork Bear Wallow, West Fork Little Colorado River above Government Springs, Stinky Creek, and KP Creek. Most were nominated and accepted as unique for the protection of Apache trout habitat. The Apache trout is listed on the Endangered Species List as threatened in Arizona.

Status of 1987 Forest Plan

Funding of programs has been less than needed to accomplish the stated goal at planned timeframes, although much progress has been made. The most important agent of change from unsatisfactory to satisfactory watershed condition is still tied to AMP implementation and monitoring allotment conditions to correct unplanned trends in condition. Ninety-six AMPs have been implemented since 1991. The remaining AMPs are due for completion following implementation of the "Chief's Schedule" by 2008. However, grazing management alone will not restore unsatisfactory soil and watershed conditions as assumed in the previous plan because many grassland and woodland areas are in Fire Regime Condition Class (FRCC) 2 or 3, especially where overstory tree canopies are heavy. Large-scale land treatments are expensive and commodity values are low in these areas which makes improvement challenging. Unfortunately, these areas have lower priority for treatment under WMSP because they are generally not within the wildland-urban interface (WUI) and estimated treatment costs are considerably higher than similar areas with commercial products.

Soil condition guidelines were implemented in the 1990s. Soil condition estimates by the ASNFs show approximately 32 percent of treatable areas on the forests are in impaired or unsatisfactory condition, primarily the lower elevation grasslands and woodlands. This estimate is comparable to the unsatisfactory watershed condition estimate of 34 percent in 1987.

Risk of large-scale, high burn severity fire is high as most of the forests are in FRCC 2 and 3. Risks to soil health and good to excellent water quality are high as demonstrated by the large fires since 2002.

Forest Plan Need for Change

- Reverse the trend of grasslands loss and restore historic grasslands.
- Maintain or improve soil and watershed conditions, where needed, emphasizing sustainability and overall ecosystem function.

- Improve those areas of the forest that are in Fire Regime Condition Class 2 and 3 to reduce risk to soil health and water quality.

Other Need for Change

- Water quality is impaired in selected streams and lakes. There is a need to implement and monitor BMPs for implementation and effectiveness on all land disturbing projects to reduce pollution sources.
- Unsatisfactory watershed conditions and reduced water quality continues in some areas. There is a need to complete and fully implement management and monitoring plans and to implement corrective actions where identified as a result of monitoring.
- High road density, poorly maintained roads, and poor road locations are primary sediment contributors to stream systems on the forests. The forests have many user created non-system roads where no road standards and erosion control practices are implemented. There is a need to complete the inventory of road location and condition, then improve road conditions and close and obliterate or stabilize unneeded roads.
- Restore unsatisfactory soil, watershed, and vegetation conditions.

Water Yield and Uses and Ground Water Resources

1987 Forest Plan Desired Conditions (Goals and Objectives)

Water Yield
Maintain a high quality sustained water yield for forest users and others. Identify and protect wetlands and flood plains.

Groundwater Resources
This topic was not considered in the 1987 forest plan. There are no goals and objectives related to ground water resources.

Current Conditions and Trends

Additional information on conditions, trends, and need for change can be found in the Ecological Sustainability Report.

Water Yield

The majority of the water coming from the Apache-Sitgreaves National Forests (ASNFs) comes from the ponderosa pine, mixed conifer and spruce-fir vegetation types. Research in the Southwest and on the ASNFs show that increases in water yield occur in these three vegetation types when tree canopies are thinned. The estimated water yield from the ASNFs is 385,000 acre feet per year. It was determined for ASNFs land only and is comparable to the 1987 estimate. The 4,000 acre feet per year increase projected in the 1987 Forest Plan EIS was tied directly to an aggressive timber harvest program, which did not materialize. Assuming no long-term drought, water yield will gradually decline as a result of current forest management. There is little opportunity for the forests to increase water yield and improve the timing of flows with current levels of vegetation management.

Water Uses

Demand for water will continue to exceed supply, except during exceptionally wet years when the amount of water produced exceeds downstream storage capacity. The forests' demand for water is very small compared to downstream users, but is extremely important for proper resource management. Better distribution of livestock and wildlife generally requires development of additional water supplies. The demand for federal reserved rights for administrative sites, road construction and watering, and fire fighting is expected to increase. Higher recreation use may require new water developments. All new water acquisitions require either application to the State or purchase from other water users. In some basins, the forests may have sufficient water rights, but the rights may need to be severed and transferred to different locations within the basin to meet management needs. Since the early 1990s, transfers and acquisitions of new waters have been subject to a temporary moratorium by the Arizona Department of Water Resources (ADWR), the State agency responsible for administering water. The ASNFs are directed to follow State water rights laws and policies. Currently, there is no method for acquiring, transferring or even correcting application mistakes that have been found.

The following table summarizes water rights the Federal Government owns or has claimed by category.

Table 3. Water rights claims on the ASNFs by adjudication basin

	Little Colorado River	Gila River	Salt River	Total
Statements of Claimants	463	933	393	1,789
Stockpond Registration	694	513	299	1,506
Well Registration	50	22	6	78
Filed Claims (including number of known certificates)	55 (38)	80 (56)	32 (8)	167 (19)
Decreed Rights	14	5	0	19
Federal Reserved Rights	36	18	12	66
Total in Basin	1,312	1,571	742	3,625

(Source: WUTS ACCESS Inventory of April 7, 2007. Does not include rights not submitted in some form from the Arizona Department of Water Resources (RJP 2007)).

Due to the increasing demands placed on the ASNFs' limited water resources, along with legal mandates to protect and preserve natural resources, the preservation of instream flows for the maintenance of fish, wildlife, and recreational uses has become critical. Instream flow is defined as the maintenance of flow necessary to preserve instream values such as aquatic and riparian habitats and fish, wildlife and riparian based recreation related to a particular stream or stream segment. The ASNFs has applied for and is monitoring the base flow conditions on segments of six streams—the Blue River, Eagle Creek, Nutrioso Creek, South Fork Little Colorado, Chevelon Creek, and Mineral Creek—with the intent of obtaining instream flow rights. Additional streams will be evaluated in the future.

Ground Water

The ASNFs are underlain by several distinct and separate aquifers; some are relatively shallow alluvial aquifers, while others are associated with extensive bedrock formations. The forests represent the top of the recharge area for one of Arizona's largest aquifers—the Coconino Aquifer, which is associated with the Coconino sandstone formation. The various aquifers beneath the forests currently supply municipal water for numerous communities including Heber/Overgaard, Show Low, Pinetop/Lakeside, Springerville, Eagar, Greer, and Alpine. Numerous small private inholdings and unincorporated towns also rely on well water.

The demand for potable water is increasing throughout Arizona. Demands are also increasing for industrial and agricultural water. One study, related to a proposed coal mining operation north of the ASNFs, predicted the dewatering of Little Colorado spinedace habitat in Chevelon Creek within 20 years at the current withdrawal levels (Hart et al 2002). The forests need to anticipate such increased demands and their effects to flowing streams, fisheries, and riparian areas, in order to maintain these resources. Within Arizona, riparian wetland acreages and streamflows have been reduced through ground water pumping; an effect which will increasingly spread onto forest lands in the near future. There is currently no water rights administration by the State for ground water in areas affecting the forests. The northern Arizona forests are currently working toward agreements with large water using industries and municipalities to lessen the effects of future withdrawals. The Southwestern Region has also established a policy to require pump testing of

wells on forest lands to determine impacts to surface flow and ground water levels and effects to forest resources prior to allowing drilling.

The ASNFs do not have full control over all potential pollutants that may affect ground water quality. For example, the Arizona Department of Environmental Quality (ADEQ) regulates wastewater discharge onto forest lands. As long as the discharge meets state water quality standards, discharge can occur. Also, because of low population densities, highways passing through the ASNFs are hazardous material transportation routes. The potential for hazardous material spills is higher with the steep grades and curves. When spills occur, they can be very expensive to clean up in order to protect ground and surface waters. De-icing salts, when improperly applied, can affect shallow water tables and cause plant and animal damage and mortality, and is currently being studied along State Highway 260 on the Black Mesa Ranger District.

Status of 1987 Forest Plan

Water yield was estimated in 1987 to be about 379,000 acre feet per year for the ASNFs. It was estimated that there would be slight water yield increases based on projected timber harvest levels. These timber harvest levels were not implemented and little to no increase is believed to have occurred. There is little opportunity for the forests to increase water yield and improve the timing of flows based on current levels of vegetation management.

Minimal amounts of water have been appropriated for forest management since 1987; however, not all demands have been met. The previously mentioned moratorium has reduced the efficiency with which the forests have been able to complete stream treatments.

Acquisition of instream flow rights was a low priority in the 1987 forest plan because watershed basins were fully appropriated, the largest water users were downstream of the forests, and stream locations were remote with few private land inholdings. However, the recent period of below average precipitation has illustrated how vital it is to maintain minimum streamflows because even modest diversions have dried up critical fish and riparian habitats.

Ground water was not specifically addressed in the 1987 forest plan. Hazardous material spills and increased demand for water in and adjacent to the forests have elevated concerns about ground water contamination and the effects of ground water pumping.

Forest Plan Need for Change

No need for change has been identified.

Other Need for Change

- Complete water uses inventory and review the accuracy of claims and water rights for all forest uses.
- Seek resolution of moratorium on processing water rights applications with the State of Arizona.
- Participate in active water rights adjudication processes.

- Seek resolution to water rights transfer and uses objections within the Norvielle Decree area in the Little Colorado Watershed.
- Complete monitoring and applications for acquisition of instream flow water rights in priority streams that contain threatened and endangered species.
- Become an active participant in all ground water/water rights negotiations that affect forest resources.
- Establish and maintain at least minimal ground water level monitoring network on the forests to establish trends and provide lead time in mitigating measured effects.
- Ensure the forests actively coordinate with Arizona Department of Transportation, ADWR, ADEQ, and others regarding the application, source, and mitigation or reclamation of maintenance or hazardous materials.

Wildlife and Fish

1987 Forest Plan Desired Conditions (Goals and Objectives)

Maintain habitat to maintain viable populations of wildlife and fish species and improve habitat for selected species. This is accomplished "directly" through habitat management and "indirectly" through coordination of habitat management in conjunction with other resource activities.

Cooperate with the Arizona Game and Fish Department to achieve management goals and objectives specified in the Arizona Wildlife and Fisheries Comprehensive Plan, and on proposals for re-introduction of extirpated species into suitable habitat. Support the Arizona Game and Fish Department in meeting its objectives for the State. No unapproved species are introduced.

Cooperate with the Arizona Game and Fish Department to achieve management goals and objectives in the Arizona Cold Water Fisheries Strategic Plan.

Improve habitat for listed threatened, endangered, or sensitive species of plants and animals and other species as they become threatened or endangered. Work toward recovery and declassification of species.

Identify and protect areas that contain threatened, endangered, and sensitive species of plants and animals.

Increase opportunities for wildlife and fish oriented recreation opportunities.

Current Conditions and Trends

Additional information on conditions, trends, and need for change can be found in the Ecological Sustainability Report.

Habitat Management

The Forest Service is a natural resource land management agency that manages the landscape and vegetation for multiple uses. Wildlife, fish, and rare plants are integral to these landscapes. Proposed projects are analyzed for potential impacts to habitats and populations. In most cases, projects are designed to take into account the needs of wildlife, fish, and rare plants. Potential impacts are often mitigated to reduce the impacts to wildlife. In addition, the effects to migratory birds and management indicator species (MIS) are also analyzed for each project. These analyses address viability of populations of wildlife and fish species on the Apache-Sitgreaves National Forests (ASNFs).

The ASNFs propose and implement limited direct habitat improvement projects, often in cooperation with other agencies, wildlife and fish advocacy groups (Rocky Mountain Elk Foundation and Trout Unlimited, for example), and through grants obtained from these groups or other agencies. The ASNFs have been successful in improving habitat by working with the Arizona Game and Fish Department's (AZGFD) Habitat Partnership Committees.

Habitat management occurs on a regular basis in conjunction with other resource activities. In some cases, projects are modified to limit potential impacts to various habitats, and in other cases, prescriptions are designed and implemented for habitat improvements. Examples of these include

leaving clumps of trees within a timber sale to provide hiding or thermal cover (limit the cover reduction) and thinning trees within dense, mid-aged stands to leave the larger trees and to promote development of old-growth characteristics in a shorter period of time (improve habitat conditions for species associated with older trees). In some projects, negative habitat changes occur for some species.

Species Diversity

Vegetative types are quite diverse on the ASNFs and are described in the ASNFs' Ecological Sustainability Report. This diversity provides for great habitat diversity for terrestrial and aquatic vertebrate species.

The Nature Conservancy (TNC) produced the document "Ecological and Biological Diversity of National Forests in Region 3" for the Southwestern Region of the Forest Service. Chapter seven describes the ecological and biological diversity of the ASNFs. Although their list is not complete, they account for 511 species including 14 native fish, 13 amphibian, 36 reptile, 324 bird, and 105 mammal species. These numbers do not include nonnative fish, resulting in a lower number than that reported in 1987. The other numbers are higher than those reported in 1987, because of increased awareness and additional surveys conducted on the ASNFs. There are over 2,500 species of plants found on the ASNFs.

Species diversity is further analyzed in the ASNFs' Ecological Sustainability Report.

Threatened, Endangered, and Sensitive Plant and Animal Species

At the time the 1987 forest plan was published, there were three species identified as threatened or endangered (T&E) on the ASNFs (Apache trout, American peregrine falcon, and bald eagle); however three additional fish species listed as threatened or endangered were later located on the forests. Since that time, two species, the American peregrine falcon and the bald eagle, have been removed from the federal list, while seven have been added. At present, there are eleven federally threatened or endangered animal species (following table).

Table 4. Status of threatened (T) and endangered (E) species on the ASNFs

Species	Federal Status[1]	Status on the ASNFs
Mexican gray wolf	ENE	1998: Arizona re-introduction population designated as experimental and non-essential
Southwestern willow flycatcher	E	Birds found in two locations; critical habitat located on the ASNFs
Mexican spotted owl	T	144 delineated territories; critical habitat located on the ASNFs
Chiricahua leopard frog	T	Species located on the ASNFs, but declining range wide
Gila chub	E	Species and critical habitat located on the ASNFs
Little Colorado spinedace	T	Species and critical habitat located on the ASNFs - under review for uplisting to endangered
Spikedace	T	Critical habitat located on the ASNFs - species not recently found
Apache trout	T	Species located on the ASNFs

Species	Federal Status[1]	Status on the ASNFs
Gila trout	T	Species and habitat located on the ASNFs
Loach minnow	T	Species and critical habitat located on the ASNFs
Razorback sucker	E	Has not been located on the ASNFs since late 1980's.

[1]Federal Status: ENE[2] = Experimental, non essential; E = Endangered; and T = Threatened
[2]The experimental, non-essential population designation for Mexican wolves allows for greater management flexibility to address conflict situations, such as livestock depredations or nuisance behavior, than if wolves had retained the full endangered designation

The razorback sucker was re-introduced in the late-1980s but is thought to no longer exist on the forests. Recovery habitat is present and available for future reintroductions. It is possible that the threatened spikedace has already been extirpated from the forest. Three species—the Chiricahua leopard frog, the Little Colorado spinedace, and the loach minnow,—are currently in danger of being extirpated from the forests.

Several sensitive species continue to decline on the landscape, such as the longfin dace, Sonora sucker, desert sucker, speckled dace, montane vole, New Mexican meadow jumping mouse, water shrew, northern leopard frog, Arizona toad, narrow-headed gartersnake, Mexican gartersnake, and many invertebrates, especially aquatic invertebrates..

All fish species are declining in numbers and populations on the forests and throughout their respective ranges. Recent recovery efforts implemented for the Apache Trout Enhancement Project could provide habitat for other native species populations on the forests if project implementation is successful.

The forest plan was amended in 1996 to include standards and guidelines to implement the recovery plan for the Mexican spotted owl and provide continued protection for the northern goshawk.

Surveys and analysis of threatened, endangered, and sensitive (TE&S) species and their habitats occur at the project level. During NEPA analysis, occupied areas and suitable/potential habitats are identified and measures are developed to mitigate effects to these species and habitats and/or protect them. A biological evaluation and/or assessment are prepared for each site-specific project. If it is determined that there are project effects, consultation occurs with the U.S. Fish and Wildlife Service.

Most opportunities to improve wildlife habitat occur as other activities are proposed, planned, and implemented. Projects include timber sales, wildland-urban interface fuels reduction, livestock grazing and prescribed burning. Habitat requirements for many TE&S species are in conflict with or at best neutral to these activities, resulting in few TE&S habitat improvement projects being implemented.

Management Indicator Species

The 1987 forest plan assigned management indicator species (MIS) to each management area. According to the plan, an MIS is "a wildlife species whose presence in a certain location or

situation at a given population level, indicates a particular environmental condition. Population changes are believed to indicate effects of management activities on a number of wildlife species."

The following table lists the management areas, the corresponding management indicator species, and the stage and type of habitat represented by that species. In 1987, it was projected that populations of all the MIS would stabilize over the long term because of the forest plan direction to establish, maintain, and improve habitat conditions. The forests' MIS Status Report (2005, updated 2006) and project analyses describe population and habitat trends for each MIS and are reflected in the following table.

Table 5. ASNFs' management indicator species, the habitat they were chosen to represent, and habitat and population trends estimated in 2006

Species	Habitat	Habitat Trend	Population Trend
Management Area 1: Suitable and Unsuitable Timber Lands (ponderosa pine, mixed conifer, spruce-fir, aspen)			
Abert squirrel	Early seral ponderosa pine	Upward	Stable, likely below potential
Northern goshawk	Late seral ponderosa pine	Upward	Stable, lower than potential
Pygmy nuthatch	Late seral ponderosa pine	Upward	Stable, likely lower than potential
Turkey	Late seral ponderosa pine	Upward	Stable, likely near potential
Elk	Early seral ponderosa pine, mixed conifer, spruce-fir	Stable	Stable, likely above carry capacity
Hairy woodpecker	Snag component – all types	Upward	Stable, likely below potential
Mexican spotted owl	Late seral mixed conifer and spruce-fir	Upward	Stable, lower than potential
Red squirrel	Late seral mixed conifer and spruce-fir	Upward	Stable, likely near potential
Red-naped (yellow-bellied) sapsucker	Late seral and snag component of aspen	Stable	Stable, lower than potential
Management Area 2: Woodlands (piñon-juniper)			
Species	**Habitat**	**Habitat Trend**	**Population Trend**
Mule deer	Early seral aspen and piñon-juniper	Upward	Downward, likely near potential

Elk	Early succession woodlands	Upward	Stable, likely above carry capacity
Juniper (plain) titmouse	Late seral and snag component of piñon -juniper	Upward	Stable, likely near potential
Pronghorn antelope	Early succession woodlands	Stable below potential	Stable, likely below potential
Management Area 3: Riparian (wetland ecosystems)			
Species	**Habitat**	**Habitat Trend**	**Population Trend**
Lincoln's sparrow	Late seral, high elevation riparian (>7000')	Stable, below potential	Undetermined
Lucy's warbler	Late seral, low elevation riparian (<7000')	Stable, below potential	Stable, likely near potential
Yellow-breasted chat	Late seral, low elevation riparian (<7000)	Upward, below potential	Stable, likely below potential
Cinnamon teal	Wetlands	Upward	Stable
Macroinverte-brates	Late seral, high and low elevation riparian	Stable	Downward
Management Area 4: Grasslands			
Species	**Habitat**	**Habitat Trend**	**Population Trend**
Pronghorn antelope	Grasslands (early succession)	Stable, below potential	Stable, likely below potential
Elk	Early succession	Stable, below potential	Stable, likely above carrying capacity

Though a noble concept, the management indicator concept has not worked well in practice. Many variables can affect population trends, with climatic variation on both the winter and summer grounds particularly affecting bird populations. Several of the MIS are hunted species; hunting strategies and goals affect their populations. Many of the MIS use a variety of habitat types, so their population trends are rarely indicative of one habitat type and stage. Also, none of the MIS are sensitive enough to habitat changes to indicate the immediate effects of habitat changes. Also, most projects are too small to show forestwide changes in population or habitat trends, and determining cumulative impacts has been very difficult given that some projects provide beneficial treatments while others provide negative impacts. MIS will not be carried into the revised plan because they are not included in the 2008 planning rule (36 CFR 219).

Wildlife "Quiet" Areas

The Arizona Game and Fish Department worked collaboratively with the ASNFs in the 1980s to establish several wildlife "quiet" areas on the forests. The areas were originally established to

improve wildlife habitat and protect soil, vegetation, and water resources. The expected benefits were:

- Less wildlife disturbance (stress) resulting in healthier animals
- Lengthened time big game animals stay in the area(s)
- Increase in the effective use (by big game) of all available suitable habitat
- Increased vegetation protection
- An increase in the outdoor experience value accompanied by an improved hunting experience
- Reduced road maintenance

These areas are in place via forest order and are closed to motor vehicle traffic An evaluation of the closures in 1987 and 1990 determined there was public support for the closures, increased use of the areas by big game and other wildlife species, and improvement in vegetation resources. Some boundary adjustments have been made, some areas re-opened, and some new quiet areas established. The current wildlife "quiet" areas on the forests are shown below.

Table 6. Wildlife "Quiet" Areas

Wildlife Area	District	Acres	Season Closed
Middle Mountain	Alpine	3,615	Aug 15-Dec 31
Hulsey Bench	Alpine	3,136	Yearlong
Open Draw	Alpine	2,051	May 1-Aug 15
Beaver Turkey Ridge	Black Mesa	2,925	Yearlong
Willow Springs	Black Mesa	8,602	Yearlong
Leonard Canyon	Black Mesa	2,529	Yearlong
FS FDR 515	Clifton	5,836	Variable
St. Peters Dome	Springerville	5,753	Yearlong
Woolhouse	Lakeside	17,368	Yearlong

Game Species

The 1987 EIS for the ASNFs' Forest Plan listed goals and objectives for game species from the Arizona State Wildlife Comprehensive Plan. The following table lists the 1987 forest plan objectives and the status of those objectives in 2007. No objectives were established for 2 species, objectives have been met for 6 of the 13 species, objectives were not met for 2 species, and objectives for the remaining 3 species were too general to determine if they were met or not.

Table 7. The 1987 forest plan objectives for game species and current status

Species	1987 Forest Plan Objectives	Was Objective Met by 2007?
Pronghorn antelope	None for the ASNFs.	N/A

Species	1987 Forest Plan Objectives	Was Objective Met by 2007?
Black bear	Maintain populations at current levels throughout bear habitat. Maintain the annual sport harvest for the period 1980 to 1985.	Yes. Moratorium placed on bear hunting in Game Management Unit (GMU) 4A from 1987 to 1989 due to loss of sows. Currently meeting or exceeding objective.
Mule deer	Increase population by 20 percent on all game management units on the forests.	No. Mule deer populations have declined on all GMUs on the forests and throughout the west. GMU 3C would be the exception with deer numbers showing improvement after the Rodeo-Chediski fire, but still may be below 1985 levels.
Elk	Maintain elk numbers consistent with habitat availability.	In some GMUs, elk numbers increased dramatically in mid-1980s to early 1990s. Agreements led to reductions from the middle to late 1990s through 2003. Concerns remain over grazing ungulate numbers, loss of browse species, drought conditions, and riparian habitat degradation. AZGFD conducts habitat based monitoring in critical areas in all GMUs, as part of management strategies.
White-tailed deer	None	N/A
Javelina	Increase the average herd size from the present 7.5 to 10 javelina per herd.	Javelina surveys are not conducted consistently which results in very small sample size, except in GMU 27. Current year average in GMU 27 was 10.5 javelina per herd. Species management guidelines were changed in 2006 to a desired herd size of 7 to 10 total animals.
Mountain lion	Prevent the elimination of the species throughout its range in Arizona.	Yes. Mountain lions remain in all GMUs on ASNFs.
Bighorn sheep	Re-establish sheep within historic habitat on the forests.	AZGFD reintroduced Rocky Mtn. bighorn sheep into potential habitat in upper Blue River.
Turkey	Maintain turkey population in game management units 1, 3B, 4A, 4B, and 27.	Yes. Turkey populations are healthy in these GMUs. This includes GMU 3C which was a part of GMU 3B in 1985.

Species	1987 Forest Plan Objectives	Was Objective Met by 2007?
Tree squirrel (Abert, red, Arizona gray)	Improve the status of populations of tree squirrels in currently occupied habitats.	No. A decline in forest health conditions, especially within ponderosa pine forests due to high densities of small diameter trees, has resulted in a greater risk of habitat loss due to drought, insect infestation, and wildfire. Recent forest restoration within the wildland-urban interface may adversely impact tree squirrels by reducing interlocking tree crowns while promoting relatively even tree spacing and the removal of entire age classes.
Cottontail rabbit	Coordinate habitat requirements in land management activities.	Yes.
Quail	Maintain or improve all existing quail habitats.	The Rodeo-Chediski Fire created/revived thousands of acres of historical Mearn's quail habitat. Mearn's quail have been observed within the burn area. Efforts should be undertaken to maintain these favorable conditions.
Blue grouse	Maintain or improve all existing habitats on the ASNFs.	Not systematically surveyed, however, incidental observations indicate an overall decline from early 1980s. Extensive wild fires in eastern GMU 27 should increase habitat capacity in this portion of range.

Personnel from the AZGFD meet annually with each ranger district on the ASNFs to discuss hunt strategies, habitat concerns, and hunt recommendations. The forests mesh these recommendations into a forest hunt recommendation letter that is sent to the AZGFD regional supervisor. This process allows for voicing of differences of opinion on the hunt strategies and has resulted in continuing dialogue between the two agencies.

Invasive Animal Species

Invasive animal species are a serious and growing problem. Nonnative animals have the potential to cause economic and environmental harm. Some examples:

European starlings were introduced to the United States in 1890. These birds are aggressive in nature and take over native species nest sites. They also have an economic impact by damaging crops.

Bullfrogs are native to the central and eastern portions of the United States but not the southwest. These animals compete with and prey on native fish and frogs.

Crayfish are not a natural part of any of Arizona's aquatic ecosystems. They compete for habitat and resources with native and sport fish and other small animals. They consume aquatic and riparian plants and degrade streams and other water bodies.

Rocky Mountain elk, an important component of the social and economic systems of the forests, are a non-native subspecies. Even when managed at levels considered to be within carrying capacity, elk browse riparian woody species which can lead to habitat degradation. As population increases above carrying capacity problems such as destruction of agricultural crops and competition with livestock may occur. At high population densities competition with native ungulate species (mule deer, white tailed deer) can occur.

Unauthorized livestock are an increasing problem on the ASNFs. Not only can these animals contribute to natural resource damage but they can also be a threat to public safety (e.g. vehicle collisions).

Cooperation with the Arizona Game and Fish Department

Over the life of the 1987 forest plan, the forest has cooperated with the AZGFD. Though the two agencies sometimes seem at odds and are focused on different missions, they strive to cooperate to provide overall coordinated management for wildlife and fish populations and their habitats. The guiding documents for the AZGFD have evolved. The most recent draft document, titled (DRAFT #2) "Wildlife 2012 - The Arizona Game and Fish Department's strategic plan for 2007-2012," is expected to be finalized in the near future.

Arizona's "Comprehensive Wildlife Conservation Strategy" (CWCS) was accepted by the U.S. Fish and Wildlife Service's National Acceptance Advisory Team in April 2006. The CWCS is the culmination of a 2-year effort during which the AZGFD solicited input from numerous experts, resource professionals, Federal and State agencies, sportsmen groups, conservation organizations, Native American tribes, recreational groups, local governments, and private citizens and integrated those ideas and concerns into a single, comprehensive vision for managing Arizona's fish, wildlife, and wildlife habitats over the next 10 years.

The ASNFs have worked closely with the AZGFD to reintroduce Apache trout into previously occupied streams, to introduce Chiricahua leopard frogs into suitable habitat, and to plan for the reintroduction of Gila trout. In addition, the Mexican wolf was reintroduced on the ASNFs and the Gila National Forest through coordination with the AZGFD and the U.S. Fish and Wildlife Service, New Mexico Game and Fish Department, Wildlife Services, and the White Mountain Apache Tribe. Reintroduction of the Little Colorado spinedace into West Chevelon Creek is expected to occur on the forests in 2007.

The two agencies discuss game species population goals and habitat improvement goals. The ASNFs provide the AZGFD with hunt recommendations and comments on approaches for adjusting tag numbers for specific species on an annual basis. They also discuss issues associated with fish stocking and reintroductions. The AZGFD comments on projects being proposed by the Forest Service to ensure that wildlife habitats are considered in the planning process.

Wildlife and Fish-Oriented Recreation Opportunities

The forests provide habitat for game animals and sport fish, including the largest amount of cold water fisheries in the Southwestern Region. Since implementation of the 1987 forest plan, the

ASNFs have worked to increase wildlife and fish recreation opportunities. Some examples include publication of the popular brochure "Field Checklist for Birds of the Apache-Sitgreaves National Forests;" and working with AZGFD on the Greer Lakes to improve fishing opportunities and to install accessible fishing facilities at Nelson, Crescent, Luna, and Big Lakes.

In 2001, 1.7 million Arizona residents and nonresidents fished, hunted, or wildlife watched in Arizona. Between 1991 and 2001, the number of individuals hunting, fishing or wildlife watching has declined, although expenditures associated with these activities has increased to just over $290 million (U.S. Department of the Interior et al. 2003). Wildlife-related activities on the ASNFs contribute approximately $10.8 million to the local economies (U.S. Forest Service 2007).

The 2006 "National Survey of Fishing, Hunting, and Wildlife – Associated Recreation: National Overview" showed that participation in hunting and fishing declined between 1996 and 2001, and again by 2006. These trends are mimicked in the state of Arizona. At the same time, non-consumptive wildlife viewing increased (U.S. Department of the Interior et al. 2006). These patterns are likely to continue in the near future, though the State of Arizona is working to reverse the declining trend in fishing and hunting.

Status of 1987 Forest Plan

Overall, the 1987 forest plan goals and objectives for wildlife and fish are still relevant and valid today.

More recent amendments, specifically amendment six for the Mexican spotted owl and the northern goshawk, have certain standards and guidelines that are too rigid to be adequately implemented and constrain certain activities that could be beneficial to the species. These amendments, in particular, need to be reworked to promote more flexibility.

Recovery plans, conservation agreements, and designated critical habitat were not considered for several threatened and endangered species. Current direction calls for T&E species habitat improvement and for working toward recovery and declassification of listed species. This goal is still valid, but is not being met due to budget constraints and other forest priorities. Risks of not achieving this goal include additional species listings, the extirpation and possible extinction of species, and declines in other species. A revised forest plan that promotes ecosystem recovery and sustainability may eventually promote species recovery, but if focus on these vulnerable species is lacking in the short term, species may continue to decline and possibly be extirpated from the forests. The economic and social goals of the forests are often contradictory to T&E species recovery goals.

Assumptions regarding plan components and emphasis areas were incorrect regarding impacts to TE&S species (i.e. most plan activities and uses are not benign or beneficial, either individually or collectively). The guidelines for habitat capability index and listed species are inadequate. Riparian vegetation (and, therefore, aquatic habitat) is outside the historic range of variability (HRV).

Recreational fishing opportunities are being met. However, these present major threats to native species viability.

Monitoring components were largely not accomplished, except for Apache trout, because of lack of funding and other forest priorities. Site-specific projects on the ASNFs have resulted in numerous biological opinions that have monitoring and surveying legal requirements for project implementation and Endangered Species Act compliance. Most biological opinion requirements have not been implemented, which has severely limited our ability to determine the impacts (both adverse and beneficial) from project implementation to the relevant species.

Forest Plan Need for Change

- Address designated critical habitat and additional federally listed species.
- Update desired conditions for riparian vegetation, incorporating the need to move toward a more sustainable, resilient state.
- Address nonnative species threats.
- Provide for individual species habitat needs not covered by the framework of ecosystem diversity.
- Evaluate special wildlife areas in a landscape context to assess the adequacy of coverage for habitats, species, and connectivity.
- Remove MIS (management indicator species) from the plan to conform to the 2008 planning rule (36 CFR 219) and focus on species of concern.
- Update guidelines for Mexican spotted owl, northern goshawk, old-growth, wildlife hiding cover along roads, defensible space around structures, and canopy cover to provide more flexibility for management activities to achieve desired conditions, while still protecting species.
- Plan components need to place a stronger emphasis on improving habitat conditions for T&E species.
- Update guidelines for mitigation measures that are currently inadequate for maintaining and improving aquatic and riparian habitat.
- Update forest plan direction to reflect new laws, policy, and regulation including the Recreational Fishing Executive Order.

Other Need for Change

- The forests need to be a leader in progressive projects to help recover listed species and to prevent the listing of sensitive species.
- Emphasize project and biological opinion monitoring.
- Restore habitat and native fish communities.
- Need to evaluate current wildlife “quiet” areas in a landscape context to assess the adequacy of coverage for habitats, species, and connectivity.

Wilderness

1987 Forest Plan Desired Conditions (Goals and Objectives)

Provide a wilderness management program that achieves the intent of the Wilderness Act of 1964 and direction in FSM 2230. More specifically, the program must maintain enduring, high quality wilderness values while providing for quality wilderness recreation experiences. Allow wildfire to play a more natural role. Protect the current status of air quality related values (AQRVs) in the Mount Baldy Class I Airshed and in other wildernesses.

Initiate the Wilderness Opportunity Spectrum (WOS) system in the forest wilderness areas. Use and track Limits of Acceptable Change (LAC) to develop wilderness management direction.

Current Conditions and Trends

There are three designated wilderness areas in the Apache-Sitgreaves National Forests (ASNFs), totaling 23,359 acres.

Table 8. ASNFs' wilderness areas

Wilderness	Year Designated	Law No.	Acres	Ranger District
Mount Baldy	1970	PL 91-504	7,079	Springerville
Escudilla	1984	PL 98-406	5,200	Alpine
Bear Wallow	1984	PL 98-406	11,080	Alpine

Visitor Use

Currently, day use is high in Mount Baldy and Escudilla Wildernesses, with Mount Baldy's use higher. Most use previously occurred during the summer months, but fall use is increasing because of the growing interest in viewing fall colors. Overall, it is expected that day use will remain high and that visitor numbers will continue to grow with the increasing local and southern Arizona populations. Visitor use in Bear Wallow Wilderness is primarily during the fall hunting seasons.

Visitor use in 1984 for the three designated wildernesses was estimated at 21,300 Recreation Visitor Days (RVD). In 1984 it was felt that use in the Mount Baldy Wilderness (20,000 RVDs) exceeded the existing capacity.

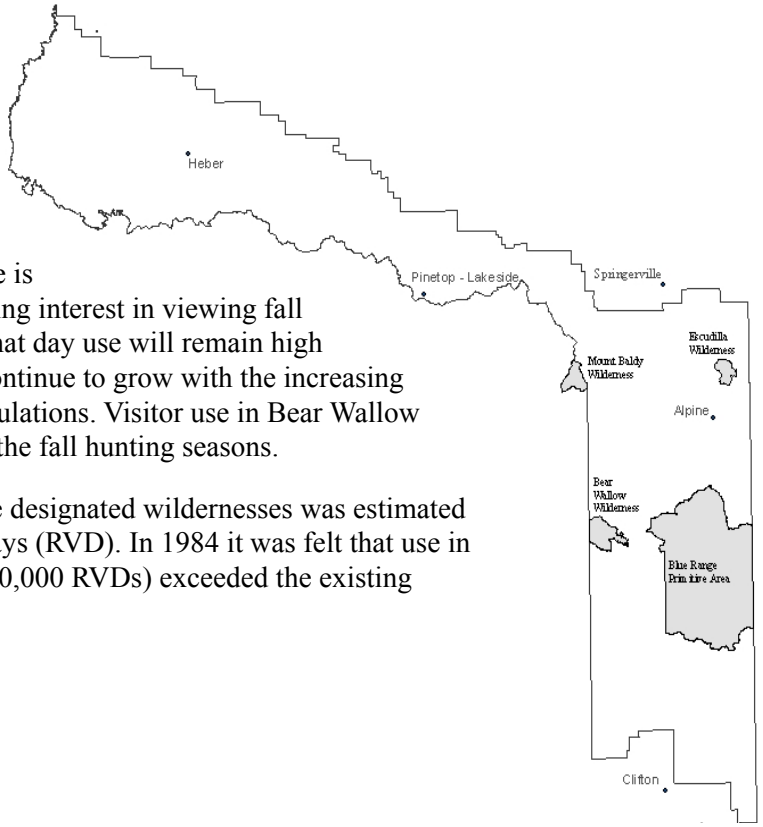


Figure 21. Location of ASNFs' wilderness areas

The 2002 National Visitor Use Monitoring program estimated some 45,690 site visits to the three designated wildernesses. Of those visitors, 81 percent were male, 19 percent were female, 92 percent were white, and over 63 percent were between 31 and 60 years of age. Most wilderness visitors were from the southern Arizona metropolitan areas (Phoenix and Tucson) or the local area. The average length of stay was 4.6 hours. Less than 1 percent of those interviewed used the services of a commercial guide.

No direct comparison can be made between the 1984 and 2002 use figures. However, RVDs (1 day = 12 hours) can be converted to visits. If the 2002 average length of wilderness stay (4.6 hours) is used, then it can be calculated that there were 56,053 visits in 1984. This could indicate a decrease in wilderness use since 1984, but the high margin of error (± 56 percent) for the 2002 data, makes this comparison inaccurate.

Mount Baldy Wilderness has group size limits to maintain the desired condition of opportunities for solitude and a semiprimitive experience. Group sizes are limited to 6 people per party for overnight camping and 12 people per party for day-use hiking and horseback riding. Maximum group size limits for Escudilla and Bear Wallow Wildernesses are 25 people and/or 35 horses.

Wilderness visitors felt there were few people there. Overall, wilderness visitors were satisfied with their visit to the ASNFs. The only categories, possibly related to the wilderness experience, where visitor satisfaction could be improved were condition of the natural environment and signing adequacy. It is not known if these concerns were specifically for the wildernesses or for the forests in general.

Trails and Trailheads

There are currently 18 miles of trail in Mount Baldy Wilderness. This trail system is heavily used by day hikers from mid-May through late September, with the heaviest use on weekends and holidays. Encounters with other hikers and equestrians are common. Limited annual trail maintenance consists of removing fallen trees and cutting brush. Major trail maintenance and restoration work occurs much less frequently because of limited funding. Observed trail maintenance concerns include water channeling, trail braiding in wet areas, development of social trails, bank failure, and soil slumping. Two trailheads provide access to Mount Baldy Wilderness. The West Baldy Trailhead is accessible to passenger cars as well as vehicles pulling horse trailers. The East Baldy Trailhead is in poor condition, accommodates a very small number of vehicles, and is accessible only by 4-wheel drive, high-clearance vehicles. Many equestrians park at Gabaldon Campground and ride to the East Baldy Trailhead; however, this has caused erosion at the East Fork Little Colorado River crossing.

The main trail in Escudilla Wilderness follows an old road and provides access to Escudilla Lookout. This National Recreation Trail receives heavy day use during the summer and fall. The old roadbed is starting to lose integrity and the trail may need to be reconstructed or relocated in the future. Trailhead facilities are in good condition, but parking is limited. Overflow parking generally occurs along the access road. The Government Trail also leads to the lookout, but starts at a different trailhead and receives less use.

There are approximately 20 miles of trail in Bear Wallow Wilderness. The five trails provide access into and within this area and are generally in good condition. There are four trailheads for

Bear Wallow Wilderness, three along the north boundary and one on the south. They are in good condition and have adequate parking for the current use.

Campsites

Presently, there are an unknown number of campsites within Mount Baldy Wilderness. Inventories in 1990 and 1991 identified approximately 200 campsites, of which 50 were naturalized. No additional inventories have been conducted and no additional campsites have been rehabilitated. There are very few campsites in Escudilla Wilderness because summer weather conditions discourage overnight use. No campsite inventory is available for Bear Wallow Wilderness, but most are along Bear Wallow Creek.

Vegetation

The majority of Mount Baldy Wilderness is spruce-fir forest with blue spruce, Englemann spruce, white fir, and corkbark fir. The remaining forested areas are mixed conifer, including Englemann and blue spruce, corkbark fir, white fir, Douglas-fir, white pine, and ponderosa pine. Tree composition varies with elevation but Douglas-fir and blue spruce are the principal species. Aspens are interspersed throughout the forests. The remainder of the area is grassland and open meadows along the upper Little Colorado River drainages. A spruce budworm infestation has killed a portion of the spruce forest. Hikers on the West Baldy Trail pass through an area with thousands of potentially hazardous, standing dead trees. Vegetation types found in Mount Baldy Wilderness include spruce fir forest, wetland/cienega, and montane/subalpine grassland. Mullein, an invasive plant species, has been found along the road to the East Baldy Trailhead.

Escudilla Wilderness has several pristine, high elevation meadows which contain relatively rare plant associations. Escudilla Wilderness vegetation types include spruce-fir forest, mixed conifer with aspen forest, montane/subalpine grassland, wetland/cienega, and ponderosa pine forest. Known invasive plant species is mullein, primarily along the southwest boundary road. Bear Wallow Wilderness has a sizeable amount of virgin ponderosa pine forest that is at risk because of the high fuel loading. This high fire risk could affect “threatened” Apache trout habitat. Major vegetation types in Bear Wallow Wilderness include mixed conifer with aspen forest, ponderosa pine forest, madrean pine-oak forest, and spruce fir forest. Known invasive plant species are mullein and bull thistle, primarily along the north and southeast boundary roads.

Trespass

All three wildernesses have motorized and mechanized vehicle trespass issues. The greatest problems occur in Mount Baldy Wilderness. Even though the boundaries are signed, ATV trespass occurs regularly along the southeast boundary from the Burro Mountain area, snowmobiles trespass along the eastern boundary during the winter, and mountain bikes and ATV tracks are occasionally found on the trails. Occasionally, ATVs and mountain bikes trespass in Escudilla Wilderness. In 2005 a jeep drove up Toolbox Draw from the southern wilderness boundary. In 2007 two ATVs drove up the Escudilla National Recreation Trail. During hunting season, ATVs regularly trespass into Bear Wallow Wilderness from Rose Spring Trailhead.

White Mountain Apache Indian Reservation

The White Mountain Apache Indian Reservation abuts Mount Baldy Wilderness on its northwest, southwest, and south boundaries. These adjacent reservation lands are closed to all public entry.

This often causes confusion and conflict because Baldy Peak, the highest point, is on reservation lands and only a very small portion of Mount Baldy, the ridge that includes Baldy Peak, is on the ASNFs. The ASNFs/reservation boundary is poorly signed so many travelers do not recognize the boundary. One quarter mile of East Baldy Trail, near the Mount Baldy summit, was relocated to mitigate erosion and trail damage and to discourage travelers from continuing onto the reservation. Approximately ¾ mile of East Baldy Trail, near the 4-mile mark, is on the reservation. The ASNFs have an agreement with the tribe for this trail segment.

Livestock from the reservation trespass into Mount Baldy Wilderness annually and often remain there until they return home on their own. The ASNFs/reservation boundary fence is missing or in disrepair in numerous locations.

Status of 1987 Forest Plan

From 1990 through 1992 the Springerville Ranger District initiated, but never completed, a limits of acceptable change (LAC) planning process for Mount Baldy Wilderness. LAC was not initiated for Escudilla Wilderness or Bear Wallow Wilderness. In 1993 the Springerville Ranger District completed the Mount Baldy Wilderness implementation schedule to provide management direction and to document management activities that would probably occur during 1993 through 1998. Approximately half of the 25 identified tasks were completed. In 2006 the forests completed the Wilderness Education Plan to increase the wilderness awareness of ASNFs' employees and forest visitors.

The West Baldy Trailhead was constructed in 1997 to replace the Sheep's Crossing facility. The Sheep's Crossing parking area was closed and rehabilitated to mitigate negative impacts to threatened, endangered and sensitive species, traffic hazards, and water quality. The Crossover Trail, a user-created route, was added into the district trail system. This 3½-mile trail connects the West Baldy and East Baldy Trails along the east wilderness boundary. Sections of this trail are in poor locations and in poor condition.

Motor vehicle use in the upper Hall Creek watershed, between Mount Baldy Wilderness and Federal Highway 273, was restricted through a special order in 2001. Prior to the special order, camping occurred immediately adjacent to the wilderness boundary, which led to a large amount of motorized trespass. This action has eliminated all motor vehicle trespass in the wilderness north of the West Fork Little Colorado River.

Authorized livestock grazing has not occurred recently in any of the ASNFs' wildernesses. Livestock grazing has not occurred in Mount Baldy Wilderness since 1992, when an agreement between the Forest Service and the livestock permittee was implemented to avoid listing of Arizona willow under the Endangered Species Act of 1973. The Greer Allotment Management Plan (AMP) decision (dated March 23, 1999) removed grazing from Mount Baldy Wilderness. Removal was based on Arizona willow protection, limited forage availability, and conflicts with recreation and riparian resource values. The South Escudilla AMP decision (dated February 13, 2001) removed grazing from Escudilla Wilderness. Removal was based on limited forage and water availability, dense timber, conflicts with recreational users, presence of wild ungulates and predators, and limited access and ability to manage and gather livestock. The KP Summer Pasture, which includes Bear Wallow Wilderness, was waived back to the Forest Service in November 2001. The limited amount of forage has not been reallocated.

The small amount of overnight use in all three wildernesses contributes to sustainability because few new campsites and associated disturbances are created. The remoteness of Bear Wallow Wilderness further contributes to the sustainability of this wilderness by screening out those visitors unwilling to drive on gravel and dirt roads.

Risks to sustainability include the lack of documented baseline wilderness values and current on-the-ground conditions and trends. The concentration of users on the few trails in Escudilla and Mount Baldy Wildernesses increases risks to sustainability because users are not dispersed throughout the areas, users have created new trails, and trails may be deteriorating from heavy use. Limited funding constrains actions that would benefit the protection of wilderness resources, including regular trail maintenance, identification and rehabilitation of unneeded campsites, and reconstruction of trails.

Forest Plan Need for Change

- Per FSM 1923, all roadless, undeveloped areas that satisfy the definition of wilderness will be evaluated and considered for recommendation as potential wilderness.
- There is a need to revise the forest plan to move vegetation to more sustainable and resilient conditions. Better describe the vegetation desired conditions.
- Consider guidelines to prevent the introduction of new noxious and invasive weeds, conduct early treatment of new noxious and invasive weed infestations, and contain and control established infestations of noxious and invasive weeds.

Other Need for Change

- Remove references to Wilderness Opportunity Spectrum (WOS). This system is not currently used.
- Develop and implement monitoring plans for each of the three designated wilderness areas, in order to document existing wilderness values and on-the-ground conditions. Use currently accepted monitoring techniques and standards.
- Based on information gathered through monitoring, develop and implement wilderness management plans for each of the three designated wilderness areas.
- Work with the White Mountain Apache Tribe to resolve the Mount Baldy Wilderness livestock trespass issue. Reconstruct or maintain the ASNFs/Reservation boundary fence.
- Remediate erosion associated with the East Fork Little Colorado River crossing (outside of Mount Baldy Wilderness) on the East Baldy Trail.

Wild and Scenic Rivers

1987 Forest Plan Desired Conditions (Goals and Objectives)

There are no forestwide goals and objectives for wild and scenic rivers in the forest plan. However three management areas provide specific direction related to potential wild and scenic rivers.

Management Area 14 (Black River-Mainstem) – Manage for possible inclusion into the National Wild and Scenic River System under a scenic classification.

Management Area 15 (East and West Fork of the Black River) – Recommend 14 miles of the West Fork of the Black River for inclusion in the [National] Wild and Scenic River System.

Management Area 16 (Chevelon Canyon) – Except for Chevelon Canyon Lake, the area will be recommended for addition to the [National] Wild and Scenic River System.

Current Conditions and Trends

The Apache-Sitgreaves National Forests (ASNFs) do not have rivers that are part of the National Wild and Scenic River System.

The ASNFs have one congressionally designated study river, the San Francisco River. The environmental impact statement for the San Francisco River was completed and a report sent to Congress on September 13, 1982. Designation was not recommended.

The ASNFs continue to manage segments (approximately 60 miles) of the Black River, the West Fork Black River, and Chevelon Creek for possible inclusion in the National Wild and Scenic River System. Other river segments identified in 1993 are also managed to protect their outstandingly remarkable values.

Status of 1987 Forest Plan

All management activities must comply with the direction in the 1987 forest plan, thus the river segments identified in the plan management areas 14, 15, and 16 continue to be eligible for inclusion in the National Wild and Scenic River System. Suitability reports have not been completed for these segments.

The 1987 forest plan also contains a guideline to "study the main stem of the Blue River from its confluence with McKittrick Creek in the Blue Range Primitive Area as a candidate stream for eligibility in the Wild and Scenic River System." This stand-alone eligibility study has not been completed. Portions of the Blue River are subject to an ongoing suitability study.

In the early 1990s, the Forest Service prepared a resource information report for the Arizona congressional delegation on potential wild, scenic, and recreational rivers in Arizona national forests. This report found eligible and assigned potential classifications (wild, scenic, or recreational) to an additional 19 river segments (270 miles) on the ASNFs.

As a result of a 2001 lawsuit regarding river management in Arizona, the Forest Service has been required to manage the rivers identified in the 1993 report as eligible rivers. Forest Service policy

(Forest Service Manual 1924.2) requires these rivers to be managed to retain their eligibility (potential to be included in the National Wild and Scenic River System) status until a suitability determination has been made (whether to recommend their inclusion into the National Wild and Scenic River System).

Classification recommendations in the forest plan do not always match the classifications proposed in the 1993 resource information report. For example, Chevelon Creek is recommended for scenic classification in the 1987 forest plan. The 1993 resource information report proposes the same segment for wild classification.

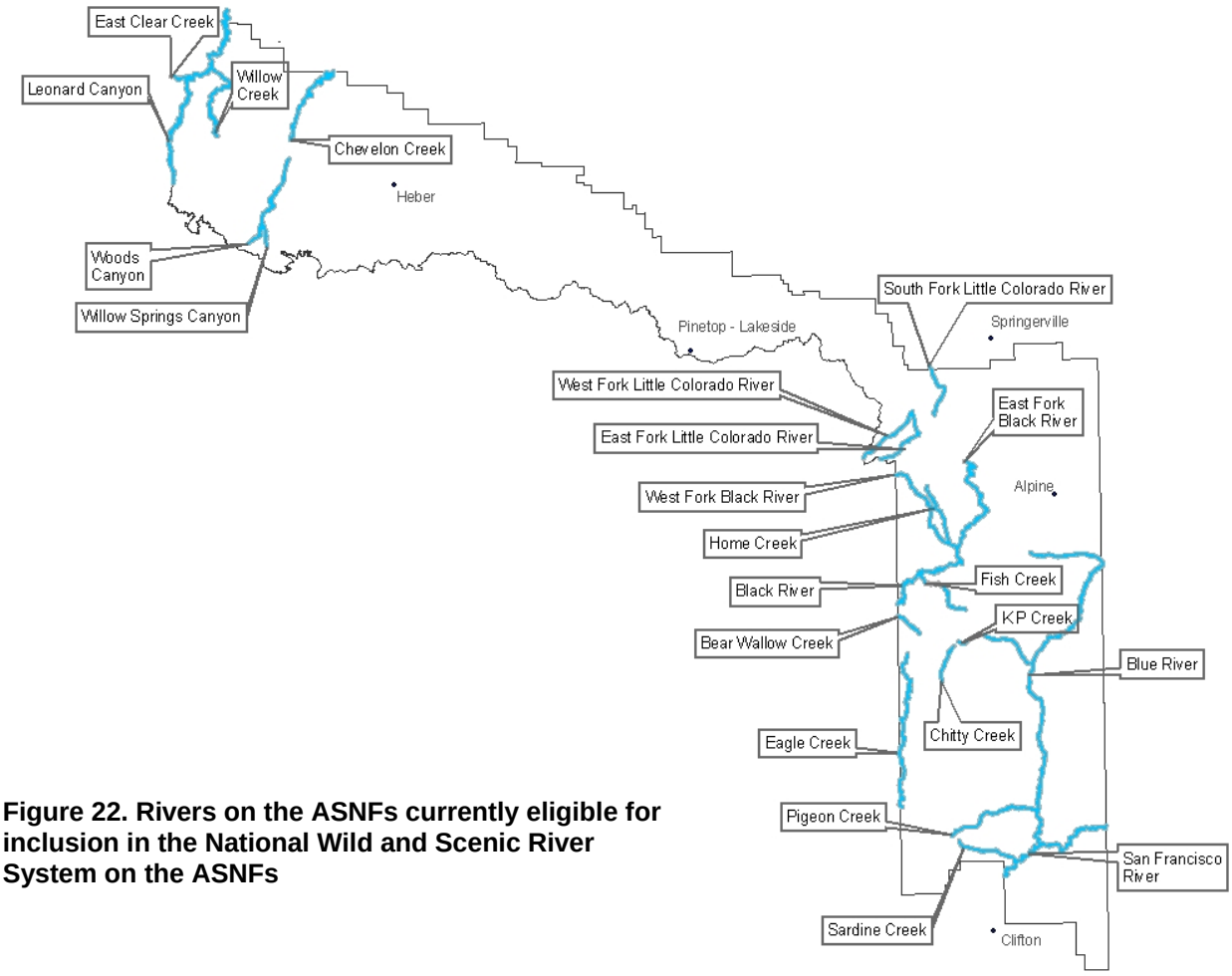


Figure 22. Rivers on the ASNFs currently eligible for inclusion in the National Wild and Scenic River System on the ASNFs

Forest Plan Need for Change

There is a need to revise the forest plan to provide direction for National Wild and Scenic River System eligible and suitable rivers.

Other Need for Change

- Review the 1993 river eligibility findings to determine if still valid. Resolve any discrepancies in proposed classifications between the 1987 forest plan and the 1993 resource information report.

Glossary of Terms

Allotment Management Plan (AMP) - A document that directs the management of livestock grazing on a specific area of public land.

Annual Operating Instructions (AOI) –A document that prescribes the annual plan of action that implements decisions in the Allotment Management Plan.

Air Quality Related Values (AQRV) - A resource, as identified by a Federal land manager, that may be adversely affected by a change in air quality. The resource may include visibility or a specific scenic, cultural, physical, biological, ecological, or recreational resource identified for a particular area.

Clean Air Act (CAA) – The Act is a federal law enacted in 1963 and amended in 1970 and 1990 which allows EPA to set limits on certain air pollutants, including setting limits on how much can be in the air anywhere in the United States. It gives EPA the authority to limit emissions of air pollutants coming from sources, such as utilities. Individual States may have stronger air pollution standards, but they not have weaker pollution limits than those set by EPA.

Clean Water Act (CWA) – The Act establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters through the EPA and States. The basis of the Act was the Federal Water Pollution Control Act of 1948, but the Act was significantly reorganized in 1972 and amended again in 1977

Collaboration - Synonym for public participation, see "Public Participation."

Deferred Maintenance - Postponing of repairs or maintenance due to lack of resources, which results in a decline of the condition and value.

Design Criteria - Part three of the plan model. The design criteria limit the strategy and subsequent projects designed to implement the strategy. The design criteria include guidelines, related monitoring measures, and a reference to other applicable guidance.

Desired Conditions - The social, economic, and ecological attributes toward which management of the land and resources of the plan area is to be directed. Desired conditions are aspirations and are not commitments or final decisions approving projects and activities, and may be achievable only over a long time period (36 CFR 219.7 (a) (2) (i)).

Ecosystem - An area that contains organisms (e.g., plants, animals, bacteria) interacting with one another and their non-living environment.

Environmental Impact Statement (EIS) - A report that documents the information required to evaluate the environmental impact of a project. It informs decision makers and the public of the reasonable alternatives that would avoid or minimize adverse effects on forest resources.

Fire Regime – Also referred to as "Natural Fire Regime," or "Historical Fire Regime." A general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention, but including the influence of aboriginal burning. The five natural (historical) fire regimes are classified based on average number of years between fires (fire frequency) combined with the fire severity (amount of replacement) on the dominant overstory vegetation.

Fire Regime Condition Class (FRCC) – An interagency standardized tool for classifying the degree of departure from historical natural fire regime vegetation, fuels and disturbance. This departure results in changes in one or more of the following ecological components: vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated disturbances (e.g. insect and disease mortality, grazing, and drought). Assessing FRCC can help guide management objectives and set priorities for vegetation treatments.
There are three fire regime condition classes for each natural (historical) fire regime. The three classes are based on low (FRCC 1), moderate (FRCC 2), and high (FRCC 3) departure from the natural (historical) fire regime. All wildland vegetation and fuel conditions and wildland fire situations fit within one of the three classes.

FRCC 1 reflects a low departure and is considered within the natural (historical) range of variability of vegetation characteristics and attributes: fuel and species composition and structure, fire frequency, severity and pattern; and other associated disturbances. The risk of losing key ecosystem components is low. Fire behavior, effects, and other associated disturbances are similar to those that occurred prior to fire exclusion (suppression) and other types of management activities that do not mimic the natural fire regime and associated vegetation and fuel characteristics. Species composition and structure are functioning within the natural (historical) range of variation at both the patch and landscape scale. Where appropriate, these areas can be maintained within the natural (historical) fire regime through management treatments, such as fire use.

FRCC 2 indicates a moderately altered ecosystem, at the patch and landscape scale, from its natural (historical) range of vegetation characteristics and attributes; fuel and species composition and structure, fire frequency, severity and pattern; and other associated disturbances. Fire frequency differs from natural (historic) intervals by one or more return intervals (either decreased or increased).This results in moderate changes to one or more of the following: fire size, intensity and severity, and landscape patterns, at the patch and landscape scales. The risk of losing key ecosystem components is moderate. Where appropriate, these areas may need moderate levels of restoration treatments, such as hand or mechanical treatments and fire use, to be restored to the natural fire regime. Observation of FRCC 2 conditions include:

- Grasslands – Moderate encroachment of shrubs and trees and/or invasive species.
- Shrublands – Moderate encroachment of trees, increased shrubs, or invasive nonnative species.
- Forestland/Woodland – Moderate increases in density, encroachment of shade tolerant tree species, or moderate loss of shade intolerant tree species caused by fire exclusion and other activities such as logging, or exotic insects or disease. Surface shrub/grass component is replaced with woody fuels and litter.

FRCC 3 exists where fire regimes have been substantially altered from their natural (historical) range of vegetation characteristics and attributes at the patch and landscape scale. Fire frequencies are departed from natural (historic) frequencies by multiple return intervals. Dramatic changes occur to one or more of the following: fire size, fire intensity, fire severity, and landscape patterns. The risk of losing key ecosystem components is high. Where appropriate, these areas may need high levels of restoration treatments, such as hand or

mechanical treatments, before fire can be used to restore the natural fire regime. Observations of FRCC 3 include:

- Grasslands – High encroachment and establishment of shrubs, trees, and/or invasive nonnative species.
- Shrublands – High encroachment and establishment of trees, increased shrubs, and/or invasive nonnative species.
- Forestland/Woodland – High increases in density, encroachment of shade tolerant tree species, or high loss of shade intolerant tree species caused by fire exclusion, and other activities such as logging, or exotic insects or disease

More information on FRCC is available at http://www.frcc.gov/citation.html

Forest Plan - See "Land and Resource Management Plan."

Fuels Reduction – A process, usually mechanical thinning and removal of vegetation, or a natural process like fire, to remove excessive live or dead wildland fuel accumulations. The objectives of fuel reduction actions are to reduce the potential for uncharacteristically intense wildland fire and increase the capability to protect life, natural resources and property, including communities at risk and sensitive municipal watersheds; sensitive natural resources and historic values, including critical native plant communities and threatened and endangered species; and other socially important cultural resources.

Forest Service Handbook (FSH) - Handbooks are the principal source of specialized guidance and instruction for carrying out the direction issued in the Forest Service Manual (FSM). Specialists and technicians are the primary audience of handbook direction. However, some FSHs include significant procedural direction needed by line officers and/or primary staff officers; examples include handbooks on land management planning, appeals, litigation, and environmental analysis. Handbooks may also incorporate external directives (such as the Federal Property Management Regulations in FSH 6409.31) with related USDA and Forest Service directive supplements.

Forest Service Manual (FSM) - The FSM contains legal authorities, objectives, policies, responsibilities, instructions, and guidance needed on a continuing basis by Forest Service line officers and primary staff in more than one unit to plan and execute assigned programs and activities.

Guidelines - Information and guidance for project and activity decision-making to help achieve desired conditions and objectives in the plan area (36 CFR 219.7 (a) (2) (iii).

Healthy Forest Restoration Act of 2003 (HFRA) - Legislation designed to expedite the preparation and implementation of hazardous fuels reduction projects on Federal land and assist rural communities, States and landowners in restoring healthy forest conditions on state and private lands. It also authorizes large-scale silvicultural research, the acquisition of conservation easements, and the establishment of monitoring and early warning systems for insect and disease outbreaks.

Historic Range of Variability (HRV) - A method used to understand the dynamic nature of ecosystems; the processes that sustain and change ecosystems; the current state of the ecosystem

in relationship to the past; and the possible ranges of conditions that are feasible to maintain. It is a useful tool for determining a range of desired future conditions, and for establishing the limits of acceptable change. Best available science and local management expertise are used to determine the historic range of variability.

Departure from the HRV can serve as an indicator of landscape conditions. For resource managers, it is important to know the range of critical ecological processes and conditions that have characterized particular ecosystems over specified time periods and under varying degrees of human influences. An understanding of how ecosystems functioned and sustained themselves in the absence of major human modification of ecological patterns and processes provides a concrete model of ecosystem integrity.

Once the HRV is established for an area, it can be compared to existing vegetative conditions to determine departures. These departures can be used to aid resource managers in the planning of their treatments.

Inventoried Roadless Area (IRA) - Areas identified in a set of inventoried roadless area maps, contained in the "Forest Service Roadless Area Conservation Final Environmental Impact Statement," Volume 2, dated November 2000, and any subsequent update or revision of those maps through the land management planning process.

Issue - Issues may be considered as: (1) a potential factor for determining need for change for a plan; (2) specific resource concerns related to a proposed action under NEPA (FSM 1950); (3) points of contention or disagreement; or (4) a subject or question of widespread public interest relating to management of the National Forest System.

Land and Resource Management Plan (LRMP) - A document or set of documents that integrates and displays information relevant to management of a unit of the National Forest System (36 CFR 219.16). Commonly referred to as the "forest plan" or "plan" this document describes how the forest will be managed for the 10- to 15-year period after it is adopted.

Land Management Planning (LMP) - A department within the Forest Service with the responsibility for long range planning for the forest's management area.

Long-term Sustained-Yield Timber Capacity - The highest uniform wood yield from lands being managed for timber production that may be sustained under specified management intensity consistent with multiple-use objectives.

Management Area - A specifically identified area within the plan area to which specific plan components (desired conditions, objectives, identification of suitable and unsuitable land uses, or special designations) are applied.

Monitoring - A systematic process of collecting information to evaluate changes in actions, conditions, and relationships over time and space, or progress toward meeting desired conditions or plan objectives.

National Environmental Policy Act (NEPA) - A law passed by Congress in 1969 to encourage productive and enjoyable harmony between people and their environment. One major tenet of NEPA is its emphasis on public disclosure of possible environmental effects of any major action

on public lands. Section 102 requires a statement of possible environmental effects to be released to the public and other agencies for review and comment.

National Forest Management Act (NFMA) – A law passed in 1976 (and revised by the 2002 Proposed Planning Rule and 2005 Planning Regulations) requiring the preparation of regional guides and forest plans.

National Wild and Scenic River System – A system of nationally designated rivers and their immediate environments that have outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, and other similar values and are preserved in a free-flowing condition. The system consists of three types of streams: (1) Recreation—rivers or sections of rivers readily accessible by road or railroad that may have some development along their shorelines and may have undergone some impoundment or diversion in the past; (2) Scenic—rivers or sections of rivers free of impoundments with shorelines or watershed still largely undeveloped but accessible in places by roads; and (3) Wild—rivers or sections of rivers free of impoundments and generally inaccessible except by trails with watersheds or shorelines essentially primitive and waters unpolluted.

National Wilderness Preservation System (NWPS) – All lands covered by the Wilderness Act and subsequent wilderness designations, irrespective of the department or agency having jurisdiction.

Need for Change - A finding by the responsible official that there is a need to modify plan components through a review of new issues and information, monitoring and evaluation results, and changes in law or regulation.

Niche - The forest's, grassland's, or prairie's role in contributing to social, economic, and ecological sustainability.

Noxious weed, invasive weed - The terms "noxious weed" or "invasive weed" are often used interchangeably. Generally, a weed is an unwanted plant that grows or spreads rapidly and aggressively replaces native and/or desired nonnative plants because their natural biological controls are missing. The deliberate or accidental introduction of noxious and invasive weeds into the United States has resulted in environmental and economic consequences.

Off-Highway Vehicle (OHV) - Any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain (36 CFR 212.1).

Off-Road Vehicle (ORV) – see Off-Highway Vehicle

Objectives - Concise projections of measurable, time-specific intended outcomes. The objectives for a plan are the means of measuring progress toward achieving or maintaining desired conditions. Like desired conditions, objectives are aspirations and are not commitments or final decisions approving projects and activities (36 CFR 219.7 (a) (2) (ii)).

Outstandingly Remarkable Values –A term from the Wild and Scenic Rivers Act; to qualify as outstandingly remarkable, it must be a unique, rare, or exemplary scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values that is significant at a regional or national level.

Plan Model - An ideal pattern that organizes the five plan components (see plan components) into three parts: the vision, strategy, and design criteria. The vision includes roles, contributions, and desired conditions. The strategy includes objectives, identification of suitable and unsuitable land uses, and special area designations. The design criteria include guidelines and other statutory requirements.

Plan Area - The National Forest System lands covered by a plan (36 CFR 219.16).

Plan Components - Broad guidance in a forest plan that identifies desired conditions, objectives, guidelines, suitability of areas, and special areas.

Potential Wilderness Area - An area including those previously identified in the "Forest Service Roadless Area Conservation Final Environmental Impact Statement," Volume 2, dated November 2000, in a unit plan or land management plan, which remain essentially roadless and undeveloped, and which have not yet been designated as wilderness or for non-wilderness uses by law. Wilderness areas are designated by Congress as part of the National Wilderness Preservation System established in the Wilderness Act of 1964.

Proper Functioning Condition (PFC) Assessment – PFC is a qualitative method for assessing the condition of a riparian-wetland areas. The assessment refers to a consistent approach for considering hydrology, vegetation and erosion/deposition (soils) attributes and processes to assess conditions based on quantitative science by an interdisciplinary team with local experience.

Properly Functioning Condition (also PFC) - PFC is also an on the ground condition and refers to a state of resiliency that will allow riparian-wetland areas to hold together during high flow events with a high degree of reliability. The resiliency allows the area to then produce desired values, such as fish and bird habitat, or forage over time.

Functional-At-Risk (FAR) – Riparian-wetlands that are functioning condition but an existing soil , water, or vegetation attribute makes them susceptible to degradation.

Nonfunctional (NF) – Riparian and wetland areas that clearly are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows, and thus are not reducing erosion, improving water quality, etc.

Public Participation - Activities that include a wide range of public involvement tools and processes, such as collaboration, public meetings, open houses, workshops, and comment periods (36 CFR 219.16).

Research Natural Area (RNA) - A specially designated area in as near a natural condition as possible, which exemplifies typical or unique vegetation and associated biotic, soil, geologic, and aquatic resources. The area is established by the Forest Service to preserve a representative sample of an ecological community primarily for scientific and educational purposes.

Responsible Official - The official with the authority and responsibility to oversee the planning process and to approve plans, plan amendments, and plan revisions (36 CFR 219.16).

Riparian - Of or relating to or located on the banks of a river or stream; "riparian land."

Risk - A combination of the likelihood that a negative outcome will occur and the severity of the subsequent negative consequences.

Science - For the purposes of this document, "science" refers to the knowledge, information, concepts, and theories based on organized systems of facts that have been learned from study, observation, and experience.

Social and Economic Elements - The variety of tangible and intangible uses, values, products, services, opportunities, and benefits provided by National Forest System lands.

Soil Productivity - The capacity of a given site to sustain plant growth.

Special Areas - Areas within the National Forest System designated for their unique or special characteristics (36 CFR 219.7 (a) (2) (v)). Special areas may contain unique scenic, historical, geological, botanical, zoological, paleontological, or other special characteristic. Such areas may contain examples of unique vegetation or animals, possess emotional significance, scenic values, or have great public popularity.

Strategy - Part two of the plan model. The strategy describes how the national forest, grassland, or prairie intends to move toward desired conditions. The strategy explains suitable uses and monitoring. It includes a prospectus of key objectives for anticipated levels of conditions, uses, and activities and related monitoring measures. Optionally, it can include recommendations for special area designations.

Suitability - The appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of the social, economic, and environmental consequences and the alternative uses foregone. A unit of land may be suitable for a variety of individual or combined management practices.

Suitability of Areas - National Forest System lands are generally suitable for a variety of multiple uses, such as outdoor recreation, range, timber, watershed, and wildlife and fish purposes. Areas within a National Forest System unit as generally suitable for uses that are compatible with desired conditions and objectives for that area. (36 CFR 219.7 (a) (2) (iv) and 219.12 (a) (1))

Sustainability - Meeting needs of the present generation without compromising the ability of future generations to meet their needs. Sustainability is composed of desirable ecological, economic, and social conditions or trends interacting at varying spatial and temporal scales. Sustainability embodies the principles of multiple use and sustained yield, appropriate to scale, without impairment to the productivity of the land.

Terrestrial Ecosystem Survey (TES) – Terrestrial ecosystem survey (TES) consists of the systematic analysis, classification and mapping of terrestrial ecosystems. This integrated survey is hierarchical with respect to classification levels and mapping intensities. A terrestrial ecosystem is an integrated representation of the ecological relationship between climate, soil and vegetation. Interpretations based upon the TES are used to predict limitations and suitabilities for management activities such as growing specific plants, construction involving soil engineering properties and other uses that impact soils and require appreciable investment. A TES forms the initial ecological base from which other kinds of surveys can build upon.

Timber Harvest - The removal of trees for wood fiber utilization and other multiple-use purposes

Timber Production - The purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use (36 CFR 219.16).

Travel Management Rule – The travel management rule (36 CFR part 212), "Travel Management; Designated Routes and Areas for Motor Vehicle Use" (70 FR 68264, November 9, 2005) requires each Forest Service administrative unit or ranger district to designate those roads, trails, and areas open to motor vehicle use.

Vision - Part one of the plan model. The vision provides direction for management and describes the roles and contributions (niche) of National Forest System lands. It describes the desired conditions of the landscape, the disturbance processes, and the benefits and experiences that these lands can supply. It contains monitoring measures to assess progress toward desired conditions.

Watershed Condition - The state of the watershed based on physical and biogeochemical characteristics and processes (such as hydrologic, geomorphic, landscape, topographic, vegetative cover, and aquatic habitat), waterflow characteristics and processes (such as volume and timing), and water quality characteristics and processes (such as chemical, physical, and biological) as they affect water quality and water resources (65 FR 62572, October 18, 2000).

Wild and Scenic Rivers - A designation for selected rivers that possess outstandingly remarkable values that preserves them in free-flowing condition and protects them for the benefit and enjoyment of present and future generations.

Wilderness - The Wilderness Act of 1964 established the National Wilderness Preservation System—the system of all America's wilderness areas—to "secure for the American people of present and future generations the benefits of an enduring resource of wilderness." An area of wilderness is defined in section 2C of the Wilderness Act (16 U.S.C. 1131-1136). The term wilderness refers to all National Forest System lands designated by Congress as part of the National Wilderness Preservation System.

Wildland-Urban Interface (WUI) – The Healthy Forest Restoration Act of 2003 defines wildland-urban interface as:

1. an area within or adjacent to an at-risk community that is identified in recommendations to the Secretary in a community wildfire protection plan; or
2. in the case of any area for which a community wildfire protection plan is not in effect.
    a. an area extending 1/2 mile from the boundary of an at-risk community;
    b. an area within 1-1/2 miles of the boundary of an at-risk community, including any land that:
        i. has a sustained steep slope that creates the potential for wildfire behavior endangering the at-risk community;
        ii. has a geographic feature that aids in creating an effective fire break, such as a road or ridgetop; or
        iii. is in condition class 3, as documented by the Secretary in the project-specific environmental analysis; and

iv. an area that is adjacent to an evacuation route for an at-risk community that the Secretary determines, in cooperation with the at-risk community, requires hazardous fuel reduction to provide safer evacuation from the at-risk community.

For more information see:
http://frwebgate.access.gpo.gov/cgibin/getdoc.cgi?dbname=108_cong_bills&docid=f:h1904enr.txt.pdf .

References

Anhold J., J. Wilson, R. Fitzgibbon, M.Fairweather, S. Dudley, D. Allen-Reid, T. Rogers, D. Conklin, R.Norris. 2000. Forest Insect and Disease Conditions in the Southwestern Region, 1999. U.S. Forest Service, Southwestern Region. Forestry and Forest Health. R3-00-01. 20 pages.

Anhold J., R. Fitzgibbon, M.Fairweather, J. McMillin, S. Dudley, D. Allen-Reid, T. Rogers, D. Conklin, R.Norris. 2001. Forest Insect and Disease Conditions in the Southwestern Region, 2000. U.S. Forest Service, Southwestern Region. *Forestry and Forest Health.* R3-00-01. 34 pages.

_____. 2002. Forest Insect and Disease Conditions in the Southwestern Region, 2001. U.S. Forest Service, Southwestern Region. *Forestry and Forest Health.* R3-02-01. 20 pages.

_____. 2003. Forest Insect and Disease Conditions in the Southwestern Region, 2002. U.S. Forest Service, Southwestern Region. *Forestry and Forest Health*. R3-03-01. 34 pages.

Anhold J., R. Fitzgibbon, M.Fairweather, J. McMillin, S. Dudley, D. Allen-Reid, T. Rogers, D. Conklin, D. Ryerson, R.Norris. Forest Insect and Disease Conditions in the Southwestern Region, 2003. U.S. Forest Service, Southwestern Region. *Forestry and Forest Health.* R3-04-02. 34 pages.

_____. Forest Insect and Disease Conditions in the Southwestern Region, 2004. U.S. Forest Service, Southwestern Region. *Forestry and Forest Health.* R3-05-01. 39 pages.

_____. 2006. Forest Insect and Disease Conditions in the Southwestern Region, 2005. U.S. Forest Service, Southwestern Region. *Forestry and Forest Health.* PR-R3-16-1. 35 pages.

_____. 2007. Forest Insect and Disease Conditions in the Southwestern Region, 2006. U.S. Forest Service, Southwestern Region. *Forestry and Forest Health.* PR-R3-16-2. 46 pages.

Arizona Department of Game and Fish. 2003. *Crayfish Ugh and Yum!* brochure. Phoenix, AZ. http://www.azgfd.gov/pdfs/i_e/Crayfish_Brochure.pdf

Arizona Department of Environmental Quality (AZDEQ). 2004 Status of ambient surface water quality in Arizona. Arizona's Integrated 305(b) Assessment and 303(d) Listing Report. EQR 05 01. http://www.azdeq.gov/environ/water/ assessment/2004.html

_____. *Air Quality Annual Report*. http://www.azdeq.gov/function/forms/download/2006/aqd.pdf

Arizona State Parks. 2002. 2003 Arizona Statewide Comprehensive Outdoor Recreation Plan. Phoenix, Arizona.

_____. 2007. 2008 Arizona Statewide Comprehensive Outdoor Recreation Plan. Phoenix, Arizona.

Arizona State University. West, Silberman, Jonathan PhD. The Economic Importance of Off-Highway Vehicle Recreation: Economic data of off-highway vehicle recreation for the State of Arizona and for each Arizona County.

Baden, J. A., and D. Snow (eds.). 1997. *The next west: public lands, community and economy in the American west*. Gallatin Institute. Island Press. Washington D.C.

Bailey J. K., Whitham T. G. 2003. Interactions among elk, aspen, galling sawflies and insectivorous birds. *Oikos* 101:127-134.

_____. 2002. Interactions among fire, aspen, and elk affect insect diversity: Reversal of a community response. *Ecology*, 83(6), pp. 1701-1712.

Booth, D. E. 2002. Searching for Paradise: Economic development and environmental change in the mountain west. Rowman and Littlefield Publishers, Inc. Lanham, MD.

Bosworth, D. 2005. U.S. Forest Service Chief's Letter to Regional Foresters, Station Directors, IITF Director, and WO Staff regarding the Implementation of the Policy Principles for Woody Biomass Utilization http://www.fs.fed.us/forestmanagement/WoodyBiomassUtilization/aboutus/documents/FS_Chief_Letter_WBU_MOU.pdf

Brown, D. E. 1994. Biotic communities of the southwestern United States and northwestern Mexico. University of Utah Press. Salt Lake City, UT.

Case, P., and G. Alward. 1997. Patterns of demographic, economic and value change in the western United States: Implications for water use and management. Report to the Western Water Policy Review Advisory Commission. U.S. Forest Service. http://www.fs.fed.us/institute/news_info/wwprc_1.html

Cassidy Regis, and Jeff Hogg. 2004. Forest Restoration and Fuels Reduction Thinning in the Southwest. PowerPoint Presentation. Slide 15.

Cocke, A. E., Fulé, P. E., Crouse, J. E. 2005. Forest change on a steep mountain gradient after extended fire exclusion: San Francisco Peaks, AZ. *Journal of Applied Ecology* 42, 814-823.

Covington, W. W., and M. M. Moore. 1994. Ecological and Historical Perspectives - Postsettlement Changes in Natural Fire Regimes and Forest Structure: Ecological Restoration of Old-Growth Ponderosa Pine Forests. The Haworth Press, Inc.153-181

Dahms C. W., Geils, B. W. *(*Technical editors*)*. 1997. An assessment of forest ecosystem health in the Southwest. U.S. Forest Service, Rocky Mountain Forest and Range Experiment Station. RM-GTR-295. 97 p. Fort Collins CO.

Fairweather, M. L., Barton K., Geils B., Manthei M. 2006b. Aspen Dieback and Decline in Northern Arizona. National Forest Health Monitoring. U.S. Forest Service, 2006 Poster Presentations. http://fhm.fs.fed.us/posters/posters06/aspen_decline.pdf

Gibson, L. J. 2006. 2005 WMSP Economic Assessment Conducted for the White Mountain Stewardship Contract Multi-Party Monitoring Board.

Hampton, H.M., S.E. Sesnie, B.G. Dickson, J.M. Rundall, T.D Sisk, G.B. Snider and J.D. Bailey. 2008. Analysis of Small-Diameter Wood Supply in Northern Arizona. Forest Ecosystem Restoration Analysis Project, Center for Environmental Sciences and Education, Northern Arizona University.

Hanes, T. H. 1993. Watershed condition assessment of the Kehl, Leonard Canyon, and upper Willow Creek sub-watersheds of the East Clear Creek watershed on the A/S and Coconino National Forests. Report submitted to the Coconino National Forest, Flagstaff, AZ. 96pp.

Hann, W., Havlina, D., Shlisky, A., et al. 2003. Interagency and The Nature Conservancy fire regime condition class website .U.S. Forest Service, US Department of the Interior, The Nature Conservancy, and Systems for Environmental Management. http://www.frcc.gov/citation.html

Hann, W. J., Bunnell, D. L. 2001. Fire and land management planning and implementation across multiple scales. *International Journal of Wildland Fire*. 10:389-403.

Hardy, C. C., Schmidt, K. M., Menakis, J. M., Samson, N. R. 2001. Spatial data for national fire planning and fuel management. *International Journal of Wildland Fire* 10:353-372.

Hart, R.J., Ward, J.J., Bills, D.J, and Flynn, M.E. 2002. Generalized hydrogeology and ground-water budget for the C aquifer, Little Colorado River Basin and parts of the Verde and Salt River Basins, Arizona and New Mexico. USDI-USGS Water-Resources Investigations Report 02-4026, Tucson, AZ.

The Healthy Forests Initiative (HFI) and Healthy Forests Restoration Act (HFRA) Interim Field Guide, FS-799. 2004. http://www.fs.fed.us/projects/hfi/field-guide

Healthy Forests Restoration Act of 2003. (P.L. 108-148). 2003 http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108_cong_bills&docid=f:h1904enr.txt.pdf

Johnson, M. A. 1995. Changes in Southwestern Forests: Stewardship Implications - Peer Reviewed. U.S. Forest Service. Southwestern Region. 6p.

Kocis, S. M., D. B. K. English, S. J. Zarnoch, R. Arnold, and L. Warren. 2002. National Visitor Use Monitoring Results. U.S. Forest Service. Southwestern Region. Apache-Sitgreaves National Forests. http://www.fs.fed.us/recreation/programs/nvum/reports/year2/R3_F1_apache_report_f.doc

Laing, L., Ambos, N., Subirge, T., McDonald, C., Nelson, C., and Robbie, W. 1987. Terrestrial ecosystem survey of the Apache-Sitgreaves National Forests. U.S. Forest Service, Southwestern Region, Albuquerque, NM. Pp 453.

Lynch, A. 2007. Draft Forest Insect & Disease Activity on the Apache-Sitgreaves N.F., and Fort Apache Indian Reservation, 1918-2006. Tucson, AZ.

McCool, S. F., and L. E. Kruger. 2003. Human migration and natural resources: Implications for land managers and challenges for researchers. GTR PNW-GTR-580.U.S. Forest Service. Pacific Northwest Research Station. Portland, OR. http://www.fs.fed.us/pnw/pubs/gtr580.pdf

McNab, W. H., and Avers, P. E. (*Compilers*). 1994. Ecological subregions of the United States: section descriptions. U.S. Forest Service. Administrative Publication. WO-WSA-5.

Morgan, P., G. H. Aplet, J. B. Haufler, H. C. Humphries, M. M. Moore, and W. D. Wilson. 1994. Historical range of variability: a useful tool for evaluating ecosystem change. *Journal of Sustainable Forestry* **2**:87–111.

National Association of State Foresters. 2003. Field Guidance for Identifying and Prioritizing Communities at Risk: www.stateforesters.org/

The National Fire Plan. 2000. http://www.forestsandrangelands.gov/NFP/index.shtml

Navajo County, U.S. Forest Service - Southwestern Region, and the White Mountain Natural Resources Working Group. 2004. A Handbook for Developing Community Wildfire Protection Plans In Accordance with Title I of the Healthy Forests Restoration Act of 2003. page 7.

Norton, G. A., S. Abraham, A. M. Veneman. 2003. Memorandum of Understanding on Policy Principles for Woody Biomass Utilization for Restoration and Fuel Treatments on Forests, Woodlands, and Rangelands. http://www.fs.fed.us/forestmanagement/WoodyBiomassUtilization/aboutus/index.shtml

Payments in Lieu of Taxes Act of 1976. Public Law 94-565, 31 U.S.C. 6901-6907, as amended.

Preparing a Community Wildfire Protection Plan. 2004.www.safnet.org/policyandpress/cwpp.cfm

Rasker, R. 2000. Your next job will be in services. Should you be worried? *Chronicle of Community*. Vol. 3(2):38-42. http://www.sonoran.org/programs/pubs/Rasker%20-%20Chronicle%20of%20Community%202000%20vol3%20no%202.pdf

Rolf, J. A. 2001. Aspen fencing in Northern Arizona: A 15-year perspective. Pp.193-196 *in* Shepperd W.D., Binkley D., Bartos D.L., Stohlgren T.J., Eskew L.G. (compilers). *Sustaining aspen in western landscapes: symposium proceedings*; 13-15 June 2000; Grand Junction, CO. U.S. Forest Service, Rocky Mountain Research Station, Proceedings RMRS-P-18. Fort Collins, CO.

Schmidt, K. M., Menakis, J. P. Hardy, C. C., Hann, W. J., and Bunnell, D. L. 2002. Development of coarse-scale spatial data for wildland fire and fuel management. GTR RMRS-GTR-87, U.S. Forest Service, Rocky Mountain Research Station, Fort Collins, CO.

Shepperd, W. D. and Fairweather, M. L.. 1994. Impact of large ungulates in restoration of aspen communities in a southwestern ponderosa pine ecosystem. Pp.344-347 *In* Covington W.S., DeBano L.F. (editors), Sustainable ecological approach to land management. U.S. Forest Service. Rocky Mountain Forest & Range Experiment Station. GTR RM-247, Fort Collins, CO.

Ten-Year Implementation Strategy. A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment, 10-Year Strategy Implementation. (Public Law 106-291). 2006 http://www.forestsandrangelands.gov/plan/documents/10-YearStrategyFinal_Dec2006.pdf

Tkacz B., M. Fairweather et al. 1999. Forest Insect and Disease Conditions in the SouthwesternRegion, 1998. U.S. Forest Service. Southwestern Region. *Forestry and Forest Health*. R3-99-01. 23 pages.

U.S. Census Bureau. 2005. United States Census, 2000. U.S. Department of Commerce. http://www.census.gov/

U.S. Department of Agriculture and Department of the Interior. 2000. Managing the Impact of Wildfires on Communities and the Environment, A Report to the President In Response to the Wildfires of 2000. http://www.forestsandrangelands.gov/reports/documents/2001/8-20-en.pdf

_____.2001. Urban Wildland Interface Communities Within the Vicinity of Federal Lands That Are at High Risk From Wildfire Federal Register Vol. 66, No. 3. http://www.gpoaccess.gov/index.html

U.S. Department of Energy. 2007. West-wide Energy Corridor Programmatic EIS Information Center. http://corridoreis.anl.gov/index.cfm

USDI (United States Department of Interior), BLM (Bureau of Land Management). 1998. Riparian area management: A user guide to assessing proper functioning condition and the supporting science for lotic areas. National Applied Resource Sciences Center, Technical Reference 1737-15. Denver, CO. Pp 126.

U.S. Department of the Interior, Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau. 2003. 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. Arizona.

_____. 2006. 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. Arizona.

U.S. Forest Service. Forest Service Handbook 1909.12, Chap. 40, Sec. 43.13.

_____. Forest Service Manual 2320.3(11)

_____. 1983. Analysis of the Management Situation. U.S.Forest Service. Southwestern Region. Apache-Sitgreaves National Forests.

_____. 1983a. Facts about the National Forest System in the Southwest. Albuquerque, NM: U.S. Forest Service. Southwestern Region.

_____. 1987. Apache-Sitgreaves National Forests Plan, as amended. U.S. Forest Service. Southwestern Region.

_____. 1987a. Environmental Impact Statement for the Apache-Sitgreaves National Forests Plan. U.S. Forest Service. Southwestern Region.

_____. 1993. Resource Information Report: Potential Wild, Scenic, Recreational River Designation.

_____. 1994. Sustaining our aspen heritage into the twenty-first century. U.S. Forest Service. Southwestern Region and Rocky Mountain Forest and Range Experiment Station. 7 p.

_____. 2000. Forest insect and disease conditions in the Southwestern Region, 1999. U.S. Forest Service. Southwestern Region, R3-00-01: 17 p.

_____. 2002. Kocis, Susan M., Donald B.K. English, Stanley J. Zarnock, Ross Arnold, Larry Warren (compilers). National Visitor Use Monitoring Results.

_____. 2003. National Environmental Policy Act Documentation Needed for Fire Management Activities; Categorical Exclusions; Notice. Federal Register/Vol. 68 No. 108. http://www.fs.fed.us/emc/hfi/notice.pdf

_____. 2004. White Mountain Stewardship Contract http://www.fs.fed.us/r3/asnf/stewardship/

_____. 2005. Apache-Sitgreaves National Forest Recreation Niche. (Recreation Site Facility Master Plan DRAFT) U.S. Forest Service. Southwestern Region.

_____. 2005a. Loss and fragmentation of open space. Forest Service Policy Position Paper. http://www.fs.fed.us/publications/policy-analysis/loss-of-open-space-position-paper.pdf

_____. 2005b. Evaluating the Economic Contribution of the National Forests in Arizona: Supplement to the 2005 Socio-Economic Assessments. U.S. Forest Service. Southwestern Region.

_____. 2006. Ecological Sustainability Work Group. Ecological Sustainability: Developing a Framework for Ecological Sustainability on National Forest Lands and National Grasslands in the Southwestern Region. U.S. Forest Service. Southwestern Region

_____. 2006a. National Visitor Use Monitoring Report, Round 1 Output Forest-Level Visitation and Confidence Intervals.

_____. 2006b. National Forest System Land Area Report, 2006. U.S. Forest Service. Washington, D.C. http://www.fs.fed.us/land/staff/lar/LAR06/table4.htm

_____. 2007, in progress. Apache-Sitgreaves National Forests Economic and Social Sustainability Assessment. U.S. Forest Service. Southwestern Region.

_____. 2007a. Interim Update of the 2000 Renewable Resources Planning Act Assessment. United States Department of Agriculture, Forest Service. FS-874. Washington D.C.

_____. 2007b. PTSAR Data Base, Volumes from 1985-2006 for Apache-Sitgreaves National Forests.

_____. 2007c. *Apache-Sitgreaves National Forests' Travel Management Rule website*. http://www.fs.fed.us/r3/asnf/projects/travel-management.shtml

_____. 2007d. **F**orest Service **Ac**tivity **T**racking **S**ystem (FACTS) Data Base for Apache-Sitgreaves National Forests. (data extracted on 02/14/2007).

_____. 2007e. Forest Transportation Atlas for Apache-Sitgreaves National Forests.

_____. 2007f. INFRA – II-DRS-Core-Inventory - for Apache-Sitgreaves National Forests (data extracted on 02/25/07).

_____. 2007g. LEIMARS – Regional Statistics – Summary of Reports (data extracted 01/23/07).

_____. 2007h. R3 Program Planning and Budget Advice. Southwestern Region. Albuquerque, NM. http://fsweb.r3.fs.fed.us/bf/budget/allocations_r3/.

_____. 2008. Special Use Application or Authorization Status – Authorizations IWEB Report. Data extracted March 03, 2008.

_____. 2008a. Trail IWEB Report. Data extracted March 03, 2008.

USDA National Agricultural Library. 2008. National Invasive Species Information Library. http://www.invasivespeciesinfo.gov/

University of Arizona School of Natural Resources. 2005. *Socio-economic assessment for the Apache-Sitgreaves National Forest* (sic). Tucson, AZ.

Vander-Lee, B., R. Smith and J. Bate. 2006. Chapter 2. Methods. *In*: *Ecological and biological diversity of National Forests in Region 3.* The Nature Conservancy.

Wilkinson, C. F. 1992. Crossing the next meridian: land, water and the future of the west. Island Press, Washington, D.C.