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Kaibab National Forest

Comprehensive Evaluation Report



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In accordance with 36 CFR 219.6 and Forest Service Handbook (FSH) 1909.12, chapter 20, a Management Review of this Comprehensive Evaluation Report was conducted to determine which needs for change issues would be carried forward into plan revision. After discussions with the leadership team about the integrated management needs for change, the intent of the 2008 Planning Rule, and the capacity of the Kaibab National Forest, I have identified four priority topics that will serve to focus the scope of this plan revision. A summary of the management Review results can be found on pages 41-44 of this report.

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4/16/09

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Date

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INTRODUCTION

Managing the Nation's forests and grasslands requires a complex integration of resource assessments, management actions, and cooperative partnerships. This is explicit in the Forest Service mission to "Sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations." It is also the challenge.

The Forest Service must follow an array of environmental laws and regulations. The Multiple Use-Sustained Yield Act of 1960 requires resource-specific plans for timber, recreation, grazing, mining, and many other resources. The Resources Planning Act of 1974 established a long-term analysis and evaluation process to collect and interpret data from across the U.S. and to use the information to manage the National Forest System. The National Forest Management Act of 1976 instituted a process for developing national forest plans. The Kaibab National Forest (KNF or Forest) originally adopted its existing land management plan (Forest Plan) in 1988, developed under the 1982 planning regulations. The KNF is currently in the process of revising its Forest Plan under the 2008 planning rule, which includes the following provisions:

- Expanded public involvement and collaboration in all phases of the development, implementation, and monitoring of land management plans.
- An adaptive framework that makes it easier for plans to be amended and revised, allowing for a more rapid response to changing conditions and scientific information.
- A strategic and aspirational approach that is focused on making progress toward desired conditions.
- Determinations about the Forest's contribution toward social, economic, and ecological sustainability.
- Consideration and appropriate use of the best available science.
- Local decision-making with the Forest Supervisor as the responsible official, allowing for more local collaboration and flexibility in decision making and putting more responsibility on the Forest Supervisor.
- A pre-decisional objection process rather than a post-decisional appeal process, encouraging the collaborative process to be maintained throughout the planning effort.
- Forest Plan revisions based on the need for change in the current Forest Plan, rather than starting over.

These provisions are intended to ensure that the planning process results in plans that (1) can be implemented, (2) will address priorities in a meaningful way, (3) can integrate management direction from various scales, and (4) are community-based.

The KNF initiated its Forest Plan revision process by gathering information, talking with partners and holding public meetings. The KNF hosted public meetings in Williams, Tusayan, Flagstaff, Phoenix, Fredonia (all in Arizona) and in Kanab, Utah. These meetings focused on desired conditions and need for change. There were also topic-specific workgroups held on Ecological Sustainability and Special Areas. Collaboration with interested American Indian Tribes has been ongoing.

This comprehensive evaluation report (CER) evaluates the need for change in light of how management under the current Forest Plan is affecting the current conditions and trends related to sustainability. The CER is based upon the sustainability reports (which describe the social, economic, and ecological conditions and trends) and other recent information. This report

provides a summary of those findings and uses them to identify where these conditions and trends indicate a need to change the current Forest Plan.

Description of the Planning Unit

Defining the vision begins with a description of the Forest, including its distinctive roles and contributions to the local area, State, region, and Nation.

Location

The Kaibab National Forest is one of six National Forests in Arizona. Located in north-central Arizona, it covers 1.6 million acres. Broken into three geographically separate ranger districts, it has the distinction of being divided by one of nature’s greatest attractions, the Grand Canyon. The North Kaibab Ranger District lies to the north of Grand Canyon National Park and the Tusayan Ranger District is to the south of the Canyon. The Williams Ranger District is farther to the south and is separated from the Tusayan Ranger District by private and Arizona State lands.

The Kaibab National Forest, along with the adjacent Coconino National Forest and Grand Canyon National Park, are at higher elevations than the surrounding Mohave and Sonoran Deserts and the Great Basin. Elevations vary on the Forest from about 3,300 feet, where Kanab Creek flows into Grand Canyon National Park, to 10,418 feet at the summit of Kendrick Peak. Most of the Forest lies between 6,000 and 8,500 feet in elevation.



Figure 1. Kaibab National Forest and Arizona counties. Shaded areas display the ranger districts: North Kaibab (top), Tusayan (middle), and Williams (bottom).

Climate

The Forest has a relatively dry climate, yet most of it is forest or woodland; the KNF has been described as a desert with trees. Averaging 7,000 feet in elevation, precipitation generally ranges from 17 to 25 inches per year. There are two distinct periods of precipitation: one in the winter from November through April, and the other during the summer rainy season, or “monsoon,”



that occurs in July and August and is dominated by thunderstorm activity. There are cold winters, mild summers, and considerable daily temperature changes. The growing season is short, with the average first freeze in mid to late September and average last freeze in mid June.

Vegetation

Three major vegetation types dominate the landscape. Pinyon/juniper woodlands cover 40 percent of the Forest, and are found at lower elevations. As elevation increases, pinyon/juniper transitions to ponderosa pine forests which cover 35 percent of the KNF. At higher elevations, mixed conifer forest predominates on the crest of the Kaibab Plateau on the North Kaibab Ranger District and on the tops of Kendrick, Sitgreaves, and Bill Williams peaks on the Williams Ranger District. Mixed conifer forests cover 8 percent of the KNF. Due to the range of elevation and soil types on the Forest, there is a wide diversity of other vegetation types present, including spruce-fir, grasslands, sagebrush shrublands, Gambel oak shrublands, and desert communities. Riparian and wetland vegetation is present in small but important areas.

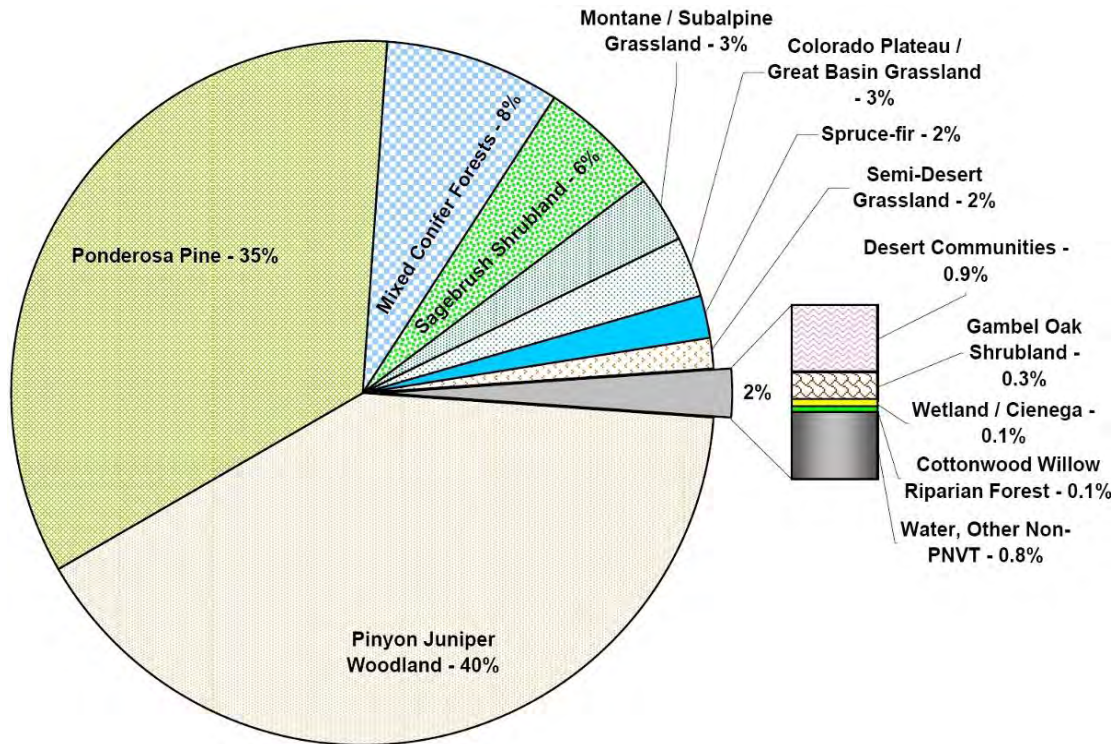


Figure 2. Percent of Potential Natural Vegetation Types* on the Kaibab National Forest.

Water

Water is very limited on the Forest: North Canyon Creek is the only perennial stream. This stream is about one and a half miles long and is located on the North Kaibab Ranger District in North Canyon Wash. There are also seeps and springs present, most notably Big Springs on the North Kaibab Ranger District and the similarly named Big Spring on the Williams Ranger District. Much of the water available to wildlife and livestock comes from earthen stock tanks, constructed lakes, and ephemeral lakes.

* Potential natural vegetation types (PNVTs) represent the vegetation type and characteristics that would occur when natural disturbance regimes and biological processes prevail.

Fire

Most of the vegetation on the Forest is adapted to the recurrent wildland fires started by lightning from spring and summer thunderstorms. Frequent, low-intensity fire plays a vital role in maintaining ecosystem health. In the 1800s, intensive grazing by domestic livestock removed the grasses that previously carried low-intensity surface fires. Early settlers suppressed fires to protect their livelihood and homes. As a result, the condition and structure of most of northern Arizona's forests, woodlands, shrublands, and grasslands have changed. Fuels continued to build up because, when fires were started, they were usually extinguished quickly.

Without fire, conifer seedlings survived at unprecedented rates. Ponderosa pine, spruce, fir, juniper and pinyon seedlings invaded forest openings, grasslands and savannahs. Many large, old trees were harvested for lumber. Today the Kaibab National Forest contains uncharacteristically dense forests with many more young trees than were present historically. The forest and woodlands are deficient in grasses, forbs, and shrubs due to tree competition, and are at high risk for insect and disease outbreaks and uncharacteristic wildfires due to the accumulated buildup of live and dead woody material. The probability and occurrence of large, uncharacteristic, stand-replacing fires continues to increase. These fires burn with more intensity, have higher tree mortality, degrade watersheds, sterilize soils, and threaten homes and communities.



Low intensity fire in open pine stand.



High intensity fire in unnaturally dense stand.

People

The communities of Tusayan, Williams, and Parks, Arizona lie within the Forest boundary. There are private land parcels on all three districts and several private subdivisions on the Williams Ranger District. Nearby communities include Kanab, Utah, and Fredonia, Valle, Ash Fork, Cameron, Gray Mountain, Supai, Grand Canyon, and Flagstaff, all in Arizona.





A wide range of people are interested in and use the Kaibab National Forest, many of which have long-time connections to the Forest. Many local residents have family traditions associated with the Forest, such as annual picnics, holiday celebrations, and hunting camps. Some have jobs or businesses dependent on Forest resources, such as ranching, logging, sandstone quarries, outfitter-guides or permitted special uses. Recreationists engage in a variety of activities, such as hiking, camping, sight-seeing, and trail riding. Indian tribes have used the land that is now the National Forest for many centuries. While tribal individuals use the Forest in ways similar to other local residents, they also have important traditional, cultural, and religious ties to the Forest.

Tourism has played an increased role over the last 20 years. The proximity of the Kaibab to Grand Canyon National Park attracts visitors from across the Nation and throughout the world. Tourism-related activities contribute to local economic development and opportunities.

The Ranger Districts

From the highlands of the Kaibab Plateau on the North Kaibab Ranger District to the rolling hills and open country of the Tusayan Ranger District to the scattered cinder cones on the Williams Ranger District, the Kaibab National Forest includes wide variations in landscape, vegetation, and wildlife. As such, each district provides unique resources and recreation opportunities and attracts its own spectrum of Forest users. The diversity of wildlife found on the KNF provides priceless enjoyment and aesthetic value for the photographer, bird watcher, nature lover, hiker, camper, and hunter. The Forest is home to a wide range of large mammals, including mule deer (*Odocoileus hemionus*), elk (*Cervus elaphus*), bighorn sheep (*Ovis canadensis*), pronghorn antelope (*Antilocapra americana*), mountain lions (*Puma concolor*), and black bear (*Ursus americanus*). There is also a wide variety of smaller wildlife and rare plants. Each of the ranger districts has a rich prehistoric and historic history. For at least 15,000 years, humans have been part of the natural ecosystem.

The KNF occupies the Dry Domain of the western United States, as described by the “National Hierarchical Framework of Ecological Units” (McNab and Avers 1994). This framework provides a standardized method widely used by the Forest Service for classifying, mapping, and describing biophysical properties of the environment at various geographic scales. Each of the three districts occupies a different ecoregional “Section” within the Dry Domain (McNab and Avers 1994), which illustrates how ecologically different the districts are from one another.

North Kaibab Ranger District

The Kaibab Plateau, which includes the North Kaibab Ranger District (NKRD) and the North Rim of Grand Canyon National Park (GCNP), contains a large area of forested land that is otherwise nonexistent for many miles, like a “green island” above the surrounding desert. The NKRD occurs in the Grand Canyon Section within the Dry Domain. Although it makes up only three percent of the Grand Canyon Section, it contains about one-third of the forested vegetation

type. The NKRD is notably different from the other districts due to its higher average elevation and amount of aspen that is intermixed in the ponderosa pine and mixed conifer forest. Because the area was never railroad-logged, the ponderosa pine type is a rare example of a fundamentally intact mature forest.

Wildlife is abundant and wildlife viewing is a popular activity. The Kaibab Plateau is one of the few coniferous ecosystems in the Southwest without the significant presence of elk. Because of this, the deer population is healthy and abundant. Most of the NKRD was designated a Game Preserve by President Theodore Roosevelt in 1906. The area still attracts large numbers of hunters in the fall seeking the renowned mule deer herd. The Kaibab squirrel, which is endemic to the Kaibab Plateau, is recognized with a National Natural Landmark. The NKRD also has one of the highest concentrations of northern goshawks known in North America. The NKRD and GCNP both provide habitat for California condors and have had nesting pairs. Frank's Lake contains a free-floating bog, a rarity in the arid southwest.

The Kaibab Plateau-North Rim Scenic Byway (Highway 67) has been described as “the most beautiful 44 miles in Arizona.” It is alternately bordered by vast meadows, lush pine forests, and stately aspens. Thousands of visitors travel to the Kaibab Plateau each fall to enjoy the vibrant colors of autumn leaves. The Rainbow Rim trail and Arizona Trail provide popular hiking, mountain biking and horseback riding opportunities. Two developed campgrounds serve campers who escape to the Plateau to enjoy cool temperatures and dramatic scenery. In years with abundant snowfall, the vast and virtually uninhabited Plateau attracts cross-country skiers and snowmobilers. Historic Jacob Lake Ranger Cabin, Brow Monument and Three Lakes Cabin are features for visitors interested in local history. Two lodges, operating under Forest Service permit, provide lodging and meals to Forest visitors; other amenities are provided at a general store.



The Kaibab Plateau occupies the center of the District; it is bordered on the east by Saddle Mountain Wilderness and on the west by Kanab Creek Wilderness. The House Rock Wildlife Area, north of Saddle Mountain, is Forest land that is managed under an agreement by the KNF and the Arizona Game and Fish Department. Scenic points at the edge of the Plateau provide breathtaking views of the Grand Canyon, Marble Canyon, House Rock Valley, Vermillion Cliffs, Kanab Creek, the Arizona Strip, the Grand Staircase, and southern Utah canyon lands.

Tusayan Ranger District

The Tusayan Ranger District (TRD) is dominated by pinyon/juniper woodlands and ponderosa pine forests, but also contains sagebrush shrubland and grasslands. It is in the Painted Desert Section within the Dry Domain. Although it makes up only about four percent of the Section, it contains 77 percent of the ponderosa pine and all of the montane grasslands in the Section.

Much of the TRD is flat to gently rolling, although there are two exceptions. The TRD is bordered on the east by the Navajo Indian Reservation, where the rugged Coconino Rim drops off toward the Little Colorado River. To the south, Red Butte dominates the landscape. This volcanic hill is a remnant of past volcanic activities and has cultural significance to local American Indian Tribes.

The TRD lies to the south of GCNP. Millions of visitors from the U.S. and abroad pass through the District along the scenic highways every year. The Ten-X Campground offers basic amenities and close proximity to Grand Canyon. Mountain bikers, hikers, and equestrians enjoy the Arizona Trail, which crosses the District from south to north and passes near Grandview Lookout Tower. There are backcountry camping, scenery, and wildlife viewing opportunities. The historic Hull Cabin and Moqui State Station are popular stops for history buffs. The TRD is known for its trophy-sized elk; there are excellent hunting opportunities for deer, elk and pronghorn antelope.



With its close proximity to several tribes, the TRD is an important area for forest product gathering as well as for traditional and ceremonial uses. Many people gather fuelwood for both personal and commercial use. Christmas tree cutting is a popular winter activity.

Over 3,000 uranium claims have been filed in the past five years on the TRD. There is one existing, though inactive, uranium mine here. The potential for uranium mining close to GCNP has drawn national attention, and a Congressional hearing was held recently about these activities.

Williams Ranger District

The Williams Ranger District (WRD) is dominated by ponderosa pine forests and pinyon/juniper woodlands. It is in the White Mountains-San Francisco Peaks-Mogollon Rim Section of the Dry Domain. Grasslands, known locally as prairies, break up the pine forest and provide dramatic contrasts in scenery, especially during the late summer wildflower season. Much of the WRD is composed of rolling terrain. Primary landmarks include Bill Williams, Kendrick and Sitgreaves Mountains, all over 9,000 feet in elevation. The south and west sides of the WRD are located at the edge of the Mogollon Rim, where the land falls abruptly from forest to woodland and semi-desert grassland. There are numerous small cinder cones scattered across the WRD that provide a range of elevation and aspects and that create diverse habitat patches in what is otherwise a large, contiguous ponderosa pine forest. Aspen occurs in small patches, scattered through the ponderosa pine and mixed conifer forests. There has been decline in aspen recruitment recently due to a combination of stressors, including herbivory, insects, disease, frost, and drought events.



The WRD has six Mexican spotted owl (*Strix occidentalis lucida*) protected activity centers, Arizona bugbane (*Actaea arizonica*) habitat, and the proposed Garland Prairie Research Natural Area. The WRD is also known for its trophy-sized elk. Wildlife is abundant in the diverse habitat patches, and many Forest users enjoy viewing wildlife. There is year-round bird watching available, including wintering bald eagles, migrating ducks, shore birds, raptors, and songbirds.

The WRD offers opportunities for recreation all year. In the summer, visitors enjoy hiking, mountain biking, horseback riding, backcountry camping, and other activities. Motorized recreation is accommodated on the Great Western Trail and on other Forest roads. The Forest has high visitation on summer weekends and holidays as people escape the heat of Phoenix and other nearby urban areas. There are four popular developed campgrounds that offer excellent fishing opportunities: Dogtown, White Horse, Cataract, and Kaibab Lake. The Arizona Game and Fish Department is responsible for regulating and managing the sport fishing in Arizona, including on the National Forests.

In wintertime, 21 miles of marked ski trails attract cross-country skiers, and snow covered roads bring snowmobilers to the Forest to enjoy the winter scenery. Elk Ridge Ski Area serves the alpine skiing, snowboarding and tubing enthusiasts, and a snow play area invites sledding and other snow play activities.

Kendrick Mountain Wilderness offers breathtaking views atop Kendrick Peak and outstanding fall color viewing. Some portions of the Sycamore Canyon Wilderness lie within the Kaibab National Forest, although the main access points are on the Coconino and Prescott National Forests.

Historic Route 66 that transverses the District is perhaps the most legendary of all U.S. highways, immortalized as the “Mother Road” by John Steinbeck in *The Grapes of Wrath* and in song by Bobby Troup in “Route 66.” Portions of the historic route passing through the WRD have been listed on the National Register of Historic Places, and a 22-mile stretch has been designated an official auto tour route.

Many Forest users cut fuelwood for personal or commercial use, and Christmas tree cutting is a favorite holiday activity as well. There are over 50 working flagstone quarries authorized on the western part of the WRD. These operations produce the majority of dimensional sandstone quarried from the National Forest System. The sandstone quarries are the primary economic base for the town of Ash Fork, Arizona.

SOCIAL AND ECONOMIC CONDITIONS AND TRENDS

The Kaibab Social and Economic Sustainability Report (Kaibab National Forest 2008a) provides a profile the social and economic environment surrounding the Kaibab National Forest (KNF). The assessment describes the relationship between public lands and the surrounding communities and trends or risks to social or economic sustainability. The communities in the five-county area surrounding the KNF (Mojave, Coconino, and Yavapai counties in Arizona and Kane and Washington counties in Utah) have undergone substantial social and economic changes over the last 20 years that have affected and will continue to affect the management of the Kaibab National Forest. The following summarizes the key conditions and trends.

Changes in Population

The population of Arizona has grown dramatically, as has the population of Utah, although not as fast. The population of the five-county area has grown, but more slowly than the state's growth rate. Growth in the retirement-age population has been strong and brings a new generation of Forest users with a wide variety of interests in recreation, higher levels of education and higher income. Despite substantial increases in individuals of multiple-race and Hispanic ethnicity, whites remain the predominant racial group in the five-county area. Coconino County was the most racially diverse within the area of assessment due to the large American Indian population. Utah generally has lower racial diversity than Arizona.

Economics

The historic dependence on national resource commodities is shifting toward a reliance on tourism and service industries, although activities such as mining, tree harvesting, and ranching continue to play an important role in rural areas. Although the Forest contributes only about one-half of a percent (0.5%) of the employment and income to the regional economy, the economic importance of the Forest to local communities is generally greater than to the regional economy as a whole.

Land Ownership and Development Patterns

In the assessment area, there are limited amounts of private land, and the demands of a growing population will put increasing pressure on national forests for both development and conservation purposes. Factors identified include demand for land exchanges, increasing land values, the cost of infrastructure development, and limited water supplies. The Forest currently permits municipal well sites on the Williams Ranger District and can anticipate receiving additional proposals. On the North Kaibab Ranger District, the Forest permits water from spring development for Jacob Lake Inn. While forests have little effect on water use, they have an important role in maintaining healthy watersheds. This role of the national forests was explicitly stated in the Organic Administration Act of 1897, which articulates that one of the primary purposes of the national forests is for "securing favorable conditions of water flows."

Private land development patterns continue to increase the wildland-urban interface. Potential conflicts exist from adjacent private land-Forest land ownerships, such as unmanaged recreation activities originating from developments, the need to reintroduce fire into Forest ecosystems, smoke management, and harassment and fragmentation of wildlife habitat.

Natural Resources and Uses

This section provides a summary of the dominant human uses and the associated resources on the Kaibab National the Forest.

Visitor Use

There has been a substantial increase in recreational uses and users on the Forest. The KNF does not currently receive the number of users that the more urban national forests receive, but there has been a steady increase. Unmanaged recreation and the increase in off-highway vehicle use are of particular concern nationally and on the KNF. A sustainable recreation program will not be able to accommodate all recreation users and uses; however, the Forest will be able to meet some of the needs of both motorized and non-motorized users. The Forest's ability to provide changing and diverse recreation opportunities will be influenced by staffing and funding; use of volunteers, agreements and partnerships increases the Forest's capacity.



The Forest completed a recreation facility analysis (RFA), an effort to create a more sustainable recreation program that aligns recreation opportunities and sites with visitors' desires, expectations, and use. RFAs have been completed on national forests and grasslands across the country. A wide variety of information about recreation use and trends was reviewed in the analysis. Using this information, input from Forest resource specialists, and public comments, a Forest recreation niche was developed. This information was used to complete the KNF Five-Year Program of Work for the Recreation Facility Analysis in December 2007.

As part of the niche analysis from the RFA, four broad Forest settings and their characteristics were identified. For each setting, recreation opportunities and desired experiences were identified. This information will help inform desired conditions for recreation in the revised Forest Plan. The Five-Year Program of Work for developed recreation sites will also be used in developing objectives and guidelines in the revised Forest Plan. The recreation niche information is summarized in Table 1.

Table 1. Kaibab National Forest recreation niche and settings (Recreation Facility Analysis).

Kaibab Forest Setting	Setting Management	Setting Function	Key Activities
Wilderness Areas – Kendrick Mountain, Sycamore Canyon, Kanab Creek, Saddle Mountain	Maintain rugged, remote, quiet, solitude	Provides solitude and opportunities for primitive non-motorized recreation experiences	Backcountry hiking, backpacking, climbing, hunting, horse packing. Opportunities for day use and remote multi-day trips that provide challenge and solitude
Oasis – Higher elevation areas dominated by ponderosa pine, meadows and prairies	Maintain scenery and driving opportunities	Provides an escape from desert heat	Biking, hiking, non-motorized and motorized activities, fishing, historic site visitation, hunting, dispersed camping, firewood/Forest product gathering, bird watching and wildlife viewing, winter play
Woodland – Lower elevation pinyon/juniper, sage flats, and grasslands	Maintain travel routes and preserve and protect cultural resources	Provide non-motorized and motorized access into general forested area.	Historic site visitation, driving for pleasure and viewing scenic vistas, non-motorized and motorized activities, hunting, dispersed camping, bird watching and wildlife viewing, firewood and pine nut gathering, gathering forest products
Scenic Corridors	Maintain scenic corridors through meadows, ponderosa pine forests, up the Kaibab Plateau and leading to the Grand Canyon	Provide access to scenic vistas and campgrounds	Driving, biking, walking for pleasure, viewing scenery, historic site visitation, visitor centers, bird watching and wildlife viewing

Special Uses

The KNF has issued over 300 special use permits for a variety of uses, including resorts, research, pipelines, storage yards, a golf course, airport, cell towers, wells, and wildlife waters.

Special use permits allow for occupancy and use of National Forest System lands. Permits may be short-term, such as for recreation events or non-commercial group uses, or longer-term such as electronic sites.

Energy and Communications

National emphasis on energy development and transmission is expected to grow, as are communications site proposals. Providing for energy needs is expected to have increased emphasis in the next decade.



Mining

Uranium development activities have gained recent national attention as the price and demand for uranium has increased. There are now over 3,000 uranium claims and active proposals for exploratory drilling on the Forest. The potential for the development of new mines and reassessment of an existing inactive mine is highly controversial, especially due to the proximity of Grand Canyon National Park and traditional use of the area by local Indian tribes.



The local sandstone quarries have played an important part in the economies of Ash Fork and Paulden. The majority of commercial sandstone produced from National Forest System lands comes from the Williams Ranger District. Small amounts of other mineral materials such as aggregate and cinders are also

authorized via permit across the Forest. Permits are issued for both commercial and private uses.

Water Quality and Supply

Increased populations will increase water demand and require additional well drilling and procurement of surface water rights. Forest management of the municipal watershed on Bill Williams Mountain could potentially have a large affect on domestic water quality and supply.



Fire Management

Reintroduction of fire into Forest ecosystems is controversial. Many communities have recognized the threat of wildfire and have developed Community Wildfire Protection Plans, which recommend thinning and reducing hazardous fuels on private lands and on the adjoining national forest. Some community members voice concerns about health and safety of burning and the smoke that is produced.



Air quality is good across the Forest. Although there are temporary decreases in air quality during fire management activities, these emissions do not exceed the National Ambient Air Quality Standards, but they can be harmful to sensitive individuals. The Arizona Department of Environmental Quality assists in the coordination of management activities to minimize the impacts. Smoke-sensitive individuals are contacted when burning activities are planned.

There are two Class I airsheds that potentially receive transient impacts from prescribed burns and wildfires on the Forest; these are Grand Canyon National Park and Sycamore Canyon Wilderness. Class I airsheds are managed to “preserve, protect, and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreational, scenic, or historic value” (Clean Air Act 1963, as amended). Clear visibility in these areas of high scenic value needs to be balanced with allowing fire to play its natural role in the ecosystem, and requires ongoing coordination with the Arizona Department of Environmental Quality and agencies on adjoining lands that also produce emissions.

Communities of Interest, Stakeholders, and Partnerships

The KNF has many communities and entities of interest that share a stake in the management of the Forest. Communities of interest include area residents, members of interest groups, agencies, and private organizations that are influenced by and, in turn, stand to influence Forest planning and management.

American Indian Tribes represent notable communities to the Kaibab National Forest. The Forest has developed strong working relationships with area Tribal communities over the years and routinely consults with seven federally recognized Tribal governments. Area Tribes use National Forest lands for activities such as gathering forest products for medicines, ceremonial use, and crafts, as well as collecting pinyon nuts and fuel wood for personal use.

The Forest has partnered with federal, state, and non-governmental groups for a wide variety of projects. Partnerships increase the Forest’s capacity for implementation of projects of mutual interest between the Kaibab National Forest and its stakeholders. Recent examples of partnerships include the following:

- Arizona Game and Fish Department – juniper thinning, seeding grasses and shrubs, noxious weed control, Apache trout habitat improvement, and creation of wildlife waters.
- Grand Canyon Trust – fence construction to exclude livestock from sensitive areas.

- Rocky Mountain Elk Foundation – construction of wildlife waters.
- Northern Arizona Flycasters – improvement of reservoirs to increase fishing opportunities.
- Northern Arizona University Forestry School – bat population surveys and water trough design, post fire snag longevity, and migratory bird surveys.
- Rural Community Fuels Management Partnership – reduce wildfire risk on private lands and near rural communities.
- Wildland Fire Advisory Council – work with local fire departments to coordinate fire suppression activities.
- Kaibab-Vermilion Cliff Heritage Alliance – survey and monitoring of cultural sites, and conduct archaeology field schools.

The Forest expects to continue partnering with stakeholders to build capacity and support for projects that will benefit resource management.

Key Social and Economic Needs Summary

The social and economic “management needs for change” are complex and revolve around providing for a range of uses, opportunities, and services consistent with the Forest Service’s multiple-use mission within the Forest’s capacity. There is a need to provide for motorized access, developed recreation sites, scenic opportunities, special uses and events, quality game habitat, commercial wood products, and firewood gathering. These existing uses will continue and are supported by laws, regulations, or policies. There are new demands that are likely to increase in the near future related to renewable energy generation and transmission (wind, solar, co-generation), uranium development, and cell tower construction. There are some less tangible social values that need to be integrated into Forest Plan components in a meaningful way, such as providing for ranching and traditional lifestyles, the intrinsic value of natural settings, ceremonial and traditional uses, and assuring opportunities for natural quiet and solitude. Finally, there is a need to protect human life, communities, infrastructure, and other property from wildfire.

The social and economic “needs” discussion in the revised Plan development will necessarily focus on achieving and maintaining an appropriate balance. The current social and economic trends will put increasing pressure on limited resources. The Forest’s ability to sustain these human uses, desires, and expectations will be influenced by its management capacity (staffing, funding, volunteers, agreements and partnerships) and the condition of the ecological resources.

ECOLOGICAL CONDITIONS AND TRENDS

This section presents key findings from the KNF Ecological Sustainability Report (ESR; Kaibab National Forest 2008b) which identifies the ecological need for change on the Forest. It considers the Forest’s spatial niche within the greater landscape (determined by ecoregional Section and watershed), the ecological conditions and trends from the ecosystem diversity analyses, and the species diversity analysis.

The current conditions of terrestrial vegetation, soils, and aquatic systems were analyzed in relation to historical (reference) conditions. The historical conditions are considered to be the natural vegetation, soil, and aquatic characteristics that occur when natural disturbance regimes and biological processes prevail. The degree of departure from reference conditions and projected future trends are indicators for which ecological characteristics need management to achieve and sustain healthy functional ecosystems on the KNF. Refer to the KNF ESR for details and background of these findings.

Terrestrial Vegetation and Soils

- Twelve major Potential Natural Vegetation Types (PNVTs) were identified on the KNF (See Figure 2 on page 3). Other land cover types account for less than one percent of the KNF.
- The dominant vegetation in all 12 PNVTs is departed from and not trending towards reference conditions.
- Two of the three ecoregional Sections contain little to no other National Forest System lands, which magnifies the KNF’s role in contributing to ecological sustainability in those Sections.
- Soil condition and productivity is departed from and not trending towards reference conditions in four PNVTs.
- Major characteristics that are departed from reference conditions include disturbance regime (fire and other disturbance types), tree density, forest structure, shrub and herbaceous cover, and relative species composition.



Aquatic Systems

- The Mogollon Rim and the Kaibab Plateau have a relatively high density of seeps and springs compared to the surrounding landscape. This suggests that the WRD and the NKRD contribute significantly to the sustainability of this rare feature in the arid Southwest.
- About half of the natural seeps and springs on the KNF are departed from reference conditions.
- North Canyon Creek is the only perennial stream on the KNF. Although it is not departed

significantly from reference conditions, it is at risk due to the threat of uncharacteristic fire in the surrounding vegetation. The creek plays an important role in the recovery of the federally threatened Apache trout (*Oncorhynchus apache*), and also provides habitat for endemic species.

Species

The KNF provides habitat for many plant and animal species. The species diversity analysis process used explicit criteria to identify a select list of Forest Planning species (and subspecies) considered of concern or interest in the planning area, rather than considering all of the relationships between ecosystem components and plant and animal species (and subspecies) in the planning area. This list of selected species serves as a proxy for species diversity in the planning area. The list was developed only for Forest Plan revision purposes and does not confer special regulatory status on any species beyond existing state and federal status. Forest Service



biologists and botanists used information from available literature, other interested people from external agencies, non-governmental organizations, and local experts to develop the list. For this CER, a total of 145 species and subspecies were identified as Forest planning species of particular management concern or interest in the planning area, as described below:

- 142 species subject to factors that threaten broad-scale terrestrial and aquatic ecosystem characteristics. The sustainability of these species is dependent upon the general sustainability of the ecosystems in which they occur.
- 96 species subject to additional threats beyond those at the broad terrestrial and aquatic ecosystem scales. This includes site-specific threats to the fine-scale habitat components that these species use, such as snags and down logs (Appendix 1), and other threats not directly related to specific habitat features, such as pesticides or disease (Appendix 2).
- 73 species considered to be narrowly endemic to the KNF and surrounding area, or that exist in a restricted distribution in the Southwest. Due to the limited extent of their occurrence, these species are more susceptible than other widely-distributed species to one large, or a few smaller, uncharacteristic disturbances.
- 3 animals listed as threatened or endangered (T&E) under the federal Endangered Species Act (ESA): the Mexican spotted owl, California condor (*Gymnogyps californianus*), and Apache trout.

Air Quality – Current Trends

Air quality in northern Arizona is considered to have a low level of impairment, and this trend is expected to continue into the future. Coconino County, which encompasses approximately 98% of the Kaibab National Forest, has very clean air. Particulate emissions from Forest management activities are regulated by the Arizona Department of Environmental Quality to ensure National Ambient Air Quality Standards are not exceeded. Uncharacteristically severe fires are the primary threat to air quality on the Forest, but are transient in effect. These particulate emissions are not expected to have adverse ecological implications. There has been an increase in ozone

levels in northern Arizona, but the source is off-Forest and not within the scope or authority of Forest Service control.

Ecological Sustainability Risk Summary

Vegetation composition and structure are departed from reference conditions in all twelve PNVTs on the Forest. The departures from reference conditions and primary threats repeat themselves across the most PNVTs on the Forest. In forested and woodland PNVTs, the greatest threat is the interruption of historical fire regimes. This has resulted in increased tree densities and canopy cover; the resulting current condition has a greater risk of uncharacteristic wildfire with high mortality of large and old trees, increased risk of insect and disease outbreaks, lower resistance to drought, and decreased diversity in the understory. In grassland PNVTs, the greatest threat is also the interruption of historical fire regimes. This has resulted in encroachment of conifer and shrubs and a greater risk of uncharacteristic wildfire, which results in increased risk of invasion by invasive species.

Terrestrial vegetation systems greatly influence soil conditions. Where canopy cover is reduced through management activities or characteristic disturbances, herbaceous understory and forage production would be expected to increase, thereby improving soil productivity. Short-term but severe erosion events after uncharacteristic fires in forest and woodland PNVTs are becoming more common and would be expected to continue under current management.



Departures of watersheds from reference conditions have occurred as the result of past livestock management, disruption of the historic fire return interval, impoundments, and invasive species. Water quality and riparian and wetland conditions are also greatly influenced by terrestrial vegetation. The primary risk to watersheds is uncharacteristic fire. Watersheds containing departed PNVTs are at higher risk of erosion and sedimentation following uncharacteristic fire, as well as a downstream risk of sedimentation. Risks to the ecological

integrity of North Canyon Creek are a particular concern because it is a unique water feature that provides habitat for rare species. If the North Canyon Wash watershed experienced a severe fire or erosion event, the stream biota would not have a natural source of replenishment, as there are no adjacent streams.

Streams, seeps, and springs in arid landscapes are centers of high biological diversity. Wildlife is more concentrated around open water sources than in the general landscape, and obligate aquatic and semi-aquatic species on the Forest are entirely dependent on these limited and scattered perennial water sources. These rare features can be better protected through controlling invasive species, fencing out livestock and possibly elk, and reducing tree densities in adjacent PNVTs.



On the following page, Table 2 summarizes the state of ecosystems on the KNF. The first column identifies the ecosystem, and the next four columns refer to the departure and trend of the ecosystem in relation to vegetation and soil reference conditions. The “Species” column refers to the total number of Forest planning species associated with that ecosystem. The “Niche” columns refer to the Forest’s spatial niche, which considers the Ranger Districts in context of the ecoregional Sections in which they occur (McNab and Avers 1994). “Districts w/ high abundance” refers to the number of Districts (zero to three) that contain a disproportionately high abundance of that ecosystem in their ecoregional Section. “Reservoir/Refuge possibility” refers to the relative role (high, medium, low) a District may have in providing a refuge or serving as a reservoir for species where ecosystems are highly departed in areas outside the Forest in their respective Section.

The table helps to illustrate which PNVTs exhibit potentially greater needs for change from an ecological standpoint. Such PNVTs generally include those that are departed from reference conditions, are becoming further departed with the passage of time, are widespread on the Forest, or are important due to significant ecological departures outside the Forest. The text following the table highlights some key points to note. This summary table should be viewed within the context of Forest planning, which considers additional issues such as the relative importance of effecting a change in departure or trend, the capacity of Forest management to effect the change, and the social and economic feasibility of the necessary actions.

Table 2. Summary of the state of ecosystems on the KNF by potential natural vegetation type (and natural water).

Ecosystem	Vegetation		Soil Condition & Productivity		Species	Niche	
	Departure	Trend	Departure	Trend	Number of species related	Districts w/ high abundance	Reservoir / Refuge possibility
Pinyon-Juniper Woodland	M	Slowly Away	M	Slowly Away	48	2	M
Ponderosa Pine	H	Static	M	Slowly Away	56	2	H
Mixed Conifer Forests	H	Away	L	Static	26	1	H
Sagebrush Shrubland	M	Away	L	Slowly Toward	20	1	L
Montane / Subalpine Grassland	H	Away	M	Static	18	3	N/A
Colorado Plateau / Great Basin Grassland	M	Away	L	Slowly Toward	16	0	H, M
Spruce-Fir Forest	H	Static	L	Static	10	1	L
Semi-Desert Grassland	L	Away	M	Slowly Toward	10	1	N/A
Desert Communities	M	Away	L	Slowly Toward	12	0	M
Gambel Oak Shrubland	L	Away	L	Static	2	2	N/A
Wetland / Cienega	L	Slowly Away	M	Static	11	1	L
Cottonwood-Willow Riparian Forest	H	Away	L	Static	3	0	H
Seeps & Springs	Individually, seeps and springs show mixed departure, but overall are moderately departed from reference conditions.				9	2	N/A

The Pinyon-Juniper Woodland, Ponderosa Pine Forest, and Montane/Subalpine Grassland

PNVTs are of concern due to the degree of departure from reference conditions in both vegetation and soil, and because they provide habitat for a relatively large number of Forest planning species:

- **Pinyon-Juniper Woodlands** - Under the current management and disturbance regimes, pinyon-juniper woodlands are becoming younger and denser than historic conditions due to changes in wildfire occurrence. With increased tree density there is an associated loss of understory plant cover and diversity. Severe wildfire effects represent a significant threat, particularly when combined with secondary threats of uncharacteristic insect/drought-related die-off and invasive plants. Lowering tree densities to within historic patterns could reverse or mitigate the threats.
- **Ponderosa Pine Forest** - Canopy cover is far denser and more continuous across developmental states than reference conditions. The primary threat is the lack of fire disturbance. Uncharacteristically intense wildfire and drought represent secondary threats. When fires occur under current conditions, they are more likely to kill a lot of the large and old trees, moving the PNVT further from reference conditions, thereby increasing the time it would take to restore the PNVT. There is a moderate risk of insect and/or disease outbreaks, which is also a function of increased tree density. The decline or loss of the aspen component of this PNVT is a concern on the Williams Ranger District and across the White Mountains – San Francisco Peaks – Mogollon Rim Section. With the combined effects of elk browsing, insects, disease, severe weather events, and lack of fire disturbance, aspen is expected to substantially decline on the Williams Ranger District in the near future.
- **Montane/Subalpine Grassland** - The primary threats to this PNVT are the lack of characteristic fire disturbance and limited nutrient cycling. Closed shrub states are becoming more common; conifers are encroaching. Under the current disturbance regime and current rate of management, further departures are expected. Excessive ungulate pressure may also play a substantial role in some areas.

The **Colorado Plateau/Great Basin Grassland** PNVT shows some degree of departure, which may be more important due to its potential role as refuge for associated species on the Tusayan and Williams Districts:

- **Colorado Plateau/Great Basin Grasslands** – This grassland PNVT is greatly departed off-Forest in the larger context of the Sections. The primary threat to this PNVT is the lack of characteristic fire disturbance and limited nutrient cycling. Conifers are also encroaching. Excessive ungulate pressure may also play a substantial role in some areas.

Mixed Conifer Forests and Sagebrush Shrublands provide habitat to a relatively large number of Forest planning species. They exhibit some departure from reference conditions, which may be more important because of the important habitat role that they play.

- **Mixed Conifer Forest** - In this PNVT, canopy cover is denser and more continuous across developmental states than reference conditions. The primary threat to this PNVT is the lack of fire disturbance. Severe wildfires and drought represent secondary threats. As with Ponderosa Pine, when fires occur under current conditions, they are more likely to result in high mortality of large and old trees and further departure from reference conditions. The time it would take to restore the PNVT after such a fire, rather than from current condition, would be greatly increased. There is a moderate risk of insect and/or disease outbreaks, which are also a function of increased tree density.
- **Sagebrush Shrubland** - The primary threats to the Sagebrush Shrubland PNVT are the combination of lack of characteristic fire disturbance, limited nutrient cycling, and closed-canopy shrub states with juniper encroachment, which create large areas susceptible to stand-replacing fire events. Further departure from reference conditions are predicted under the current management and disturbances. Severe elk pressure on native shrubs, particularly sensitive species on the Tusayan Ranger District, has been documented. Bison herbivory may pose a secondary threat on the North Kaibab Ranger District. Fires occurring under current conditions may lead to negative outcomes for native species composition. Increased invasive plant cover after wildfire is considered a moderate risk.

The **Desert Communities Wetland/Cienega** PNVTs occupy a proportionally small area of the Forest, but provide habitat for a number of species not found in other areas of the Forest.

- **Desert Communities** - The primary threat to the Desert Communities PNVT is the invasion of exotic plant species, such as cheat grass, which shortens the fire return interval and changes species composition. Secondarily, closed shrub states are becoming more common and junipers are encroaching, increasing the risk of uncharacteristic fire disturbance. This could further reduce native plant diversity and structure, increasing invasive plant cover and erosion.
- **Wetland/Cienega** - The primary threats to the Wetland / Cienega PNVT are the lack of characteristic fire disturbance, limited nutrient cycling, and reduced water input. Trees from the adjacent forests and woodlands are encroaching. Tree encroachment and high tree density in adjacent PNVTs may lower the water table and reduce water flow in this system. Contributing to this is the secondary threat of drought. A slow departure from reference conditions is estimated overall. However, on the North Kaibab Ranger District, encroachment is occurring more rapidly due to the linear shape of the wetland patches. Fire disturbance under current conditions may lead to some negative outcomes for species composition toward invasive plants and is deemed a moderate risk.

INTEGRATED MANAGEMENT NEED FOR CHANGE

Management needs for change were developed by integrating information from the ecological needs for change with the key needs from the social and economic sustainability report. This integration considered the Forest niche, Forest Service mission, and public comments received. The process for integrating the ecological and socio-economic needs for change started with the specific ecological needs for change by ecosystem type, and considered how activities addressing the ecological needs would affect social and economic sustainability (Appendix 4). The reverse was also done, starting with the social and economic needs, considering how the associated activities would affect ecological sustainability (Appendix 5). The intent of the integration is to display how the key management needs for change and potential activities interact (see Table 3).

The integration process highlighted some of the important relationships and contexts. These relationships are important for determining which of the ecological, social, and economic needs to emphasize in the development of the revised Forest Plan. In some cases, the ecological and socioeconomic needs are concordant, or in agreement, where addressing an ecological or socio-economic need has mutually beneficial effects. In other cases they are discordant, and careful consideration of the risks and trade-offs may be necessary to achieve and maintain sustainability.

The most apparent need for change is to reduce the risk of uncharacteristic fires and restore the structure and function of forested ecosystems. This emerged as the highest need for change in the ecological sustainability report and as a very high need in the socio-economic sustainability analysis. The concordant socioeconomic and ecological benefits of restoring the historic forest structure include improving scenic integrity, providing for commercial and personal-use wood products, protecting cultural resources, protecting against undesired fire effects, improving firefighter safety, increasing understory diversity, and improving soil condition. There are some discordances associated with restoration activities including noise, ground disturbance, and smoke.

Restoring aspen also emerged as a high-concordance need. Aspen is an important species because of its contribution to local ecological diversity and its high social and economic value associated with scenery and tourism. Aspen has declined in areas across the West due to the combined effects of elk browsing, insects, disease, severe weather events, and lack of fire disturbance. Aspen decline has been of particular concern on the Williams Ranger District.

Protecting seeps springs, and ephemeral wetlands came forward as an important need for change. Natural waters in arid landscapes are centers of high biological diversity. About half of the natural seeps and springs on the KNF are currently departed from reference conditions. Protection of these rare resources can be accomplished by controlling invasive species, fencing out livestock and possibly elk, and reducing tree densities in adjacent PNVTs. There are high social and economic values associated with natural water bodies and ecological diversity, such as bird watching and historic and traditional cultural use.

In providing for motorized recreation opportunities, there are discordances between ecological and social needs. Motorized recreation is a rapidly growing recreation activity and it is considered a valid use on national forests. However, it can disturb wildlife, damage vegetation, spread invasive plants, and create soil disturbance. There are also discordances within the social context for the desire for more primitive natural experiences. Plan components may be needed that ensure appropriate management that provides for a range of opportunities while protecting resources.

Table 3. Ecological and Socio-Economic needs, potential activities, and how those activities may affect ecological and socio-economic sustainability. Note: Shaded text identifies discordances

Ecological or Socio-Economic Need	Potential Management Response	Ecological Results/Change	Social and Economic Results/Change	Management Considerations
<p>Reduce tree density and change forest structure towards reference conditions in ponderosa pine, mixed conifer, spruce/fir, and pinyon/juniper</p>	<p>Commercial and non-commercial thinning</p> <p>Regeneration of forest in patterns characteristic of reference conditions</p>	<p>Increases understory diversity</p> <p>Restores historic structure</p> <p>Improves soil condition</p> <p>Increase water yield</p> <p>Short-term disturbances from mechanical thinning activities</p>	<p>Improves scenic integrity</p> <p>Promotes diverse economy</p> <p>Provides fuelwood and other personal use wood products</p> <p>Protects heritage resources from high-intensity fires</p> <p>Maintains and improves recreation settings</p> <p>Protects communities and infrastructure</p> <p>Improves firefighter safety</p> <p>Short-term adverse visual and noise effects</p>	<p>There is much more work to do than the KNF can do with its current capacity</p> <p>Treatments must be prioritized</p> <p>Need to communicate and build trust with environmental groups so that there is less skepticism about larger-diameter tree cutting</p> <p>Timing and rate of treatment implementation needs to be considered to minimize short-term adverse effects to species and recreational users</p> <p>The costs of completing treatments can be expensive</p> <p>There is a currently a lack of demand and capacity for processing of small-diameter wood products that could help to offset treatment costs</p>
		<p>Reduces risk of uncharacteristic fire and erosion</p>		
		<p>Protects watersheds, particularly Bill Williams Mountain and North Canyon Creek</p>		

Ecological or Socio-Economic Need	Potential Management Response	Ecological Results/Change	Social and Economic Results/Change	Management Considerations
<p>Restore historic fire regime in both interval and intensity</p>	<p>Prescribed fire and/or thinning</p> <p>Manage wildland fires to achieve resource benefits</p> <p>Once conditions achieved, maintain conditions with fire and/or thinning</p>	<p>Increases understory diversity</p> <p>Restores historic structure</p> <p>Improves soil condition</p>	<p>Improves scenic integrity</p> <p>Protects heritage resources from high intensity fires</p> <p>Maintains and improves recreation settings</p> <p>Protects communities and infrastructure</p> <p>Improves firefighter safety</p> <p>Effects to human health from smoke emissions</p> <p>Transient impairment to visibility in scenic areas</p>	<p>Limits exist to amount of smoke production tolerable by public</p> <p>Risk of undesired fire effects</p> <p>Limits to amounts of acceptable change</p> <p>Desired conditions need to clearly relate to fire behavior and effects</p> <p>There may be an increased need to restore the historic structure in response to climate change and the potential for prolonged drought and intense disturbance events</p>
		<p>Reduces risk of uncharacteristic fire and erosion</p>		

Ecological or Socio-Economic Need	Potential Management Response	Ecological Results/Change	Social and Economic Results/Change	Management Considerations
Reduce tree encroachment in sagebrush shrublands, grasslands, meadows and wetland/cienegas	Thinning Burning	Increases habitat quality and quantity for associated species Contributes to restoring fire regime In wet meadows, helps to raise water table Short-term disturbances from mechanical thinning activities	Maintains and improves scenic quality Provides fuelwood and other personal-use wood products	Development of private land is disproportionately reducing grassland / shrubland availability off-Forest, which may increase the need to restore and maintain these ecosystems on the Forest
Restore/revegetate ponderosa pine, mixed conifer and cottonwood/willow forests following uncharacteristic fire	Planting and seeding	Forest structure is restored sooner than with natural regeneration Enables native plants to compete better with invasive plants	Scenery and recreation experiences return sooner	Post-fire management also will need to address invasive species and desirable fuel loading

Ecological or Socio-Economic Need	Potential Management Response	Ecological Results/Change	Social and Economic Results/Change	Management Considerations
<p>Restore desired amount and arrangement of dead woody material following uncharacteristic wildfire</p>	<p>Jackpot / pile burning Salvage logging</p>	<p>Returns dead woody materials to within historical range of variability</p> <p>Reduces risk of adverse fire effects to soils in the event of a re-burn</p> <p>Mechanical disturbance can contribute to adverse soil impacts in post-fire areas</p>	<p>Sale of salvageable timber provides opportunities for economic benefit to local communities and helps recoup costs of fire recovery</p>	<p>Uncertainty about effects of removing excess dead woody material leads to distrust from the public and environmental communities</p> <p>Some areas may benefit ecologically more than other areas, so careful consideration about how and where to remove excess dead woody material must be exercised</p>
<p>Control invasive species in cottonwood/willow riparian habitat, pinyon/juniper woodlands, shrublands, desert communities, and wetland/cienega</p>	<p>Mechanical and herbicide treatments Biological control</p>	<p>Helps to preserve ecosystem function</p> <p>Reducing cheatgrass helps to restore natural fire regime</p> <p>Reduces competition with native species</p>	<p>Maintains and improves recreation settings</p> <p>Potentially creates conflicts with cultural resource users if herbicides are applied in traditional gathering areas</p>	<p>Current level of invasive plants in grasslands is low or unknown; monitoring is important because potential effects from invasion would be rapid and dramatic, resulting in an altered fire regime and wide-scale habitat loss</p> <p>Communication with chemically-sensitive people is critical during treatments</p>

Ecological or Socio-Economic Need	Potential Management Response	Ecological Results/Change	Social and Economic Results/Change	Management Considerations
<p>Protect and restore seeps, springs, ephemeral wetlands, and North Canyon Creek</p>	<p>Fence adversely impacted areas to exclude livestock and elk</p> <p>Re-establish associated aquatic vegetation where it has degraded</p> <p>Reduce tree density in surrounding area</p>	<p>Retains and restores pockets of high biodiversity in surrounding arid landscape</p> <p>Restores natural water flow</p> <p>Provides water for wildlife</p> <p>Supplies habitat for aquatic-dependent species</p>	<p>Protects areas of high cultural/Tribal value</p> <p>Protects highly desired scenic and recreation values</p> <p>Provides highly desired wildlife viewing opportunities</p>	<p>Protecting and restoring these aquatic resources provides many benefits for a relatively small amount of management effort</p>
<p>Encourage aspen persistence and recruitment on the Williams Ranger District</p>	<p>Remove competing conifers by thinning and/or burning</p> <p>Restore natural fire regime</p> <p>Protect aspen saplings from large herbivores; AGFD is a key cooperater in developing elk herbivory management strategies</p>	<p>Managing for healthy aspen stands maintains and improves biodiversity in ponderosa pine and mixed conifer forests</p>	<p>Healthy aspen stands have high social and economic value</p> <p>Protecting aspen stands with herbivore-exclusion fencing is considered unsightly</p>	<p>Aspen are declining for a variety of reasons and will require a variety of management approaches to meet ecological needs</p> <p>Coordination with Arizona Game & Fish Department is critical to balance each agency's management needs and find compatible solutions</p>

Ecological or Socio-Economic Need	Potential Management Response	Ecological Results/Change	Social and Economic Results/Change	Management Considerations
<p>Provide opportunities to mine uranium deposits</p>	<p>Authorize mining</p> <p>Propose withdrawal of sensitive areas</p> <p>Provide guidance for development</p>	<p>Creates site disturbance</p> <p>Fragments wildlife habitat</p> <p>Promotes spread of invasive species</p> <p>Potential for impacts to narrow endemic species</p> <p>Unknown contamination impacts to other ecological resources (i.e., air, water, soil, species)</p>	<p>Contributes to national energy needs</p> <p>Creates high-paying jobs in mining industry</p> <p>May trigger tribal concerns due to loss of traditional cultural properties</p> <p>Degrades scenic integrity</p> <p>Changes recreation opportunities from undeveloped to developed</p>	<p>Controversial issue</p> <p>The Mining Act of 1872 (and other related policies and directions) authorizes mineral exploration and development on public land</p> <p>Work with other agencies, Tribes, the public, and companies to balance and find solutions</p>
<p>Protect human life, human communities and community infrastructure, other property and improvements</p>	<p>Conduct commercial and non-commercial thinning</p> <p>Conduct prescribed burning</p> <p>Manage wildland fires to achieve resource benefits</p> <p>Suppress fires as necessary</p>	<p>Reduces risk and extent of uncharacteristic fire</p> <p>Short-term disturbances from mechanical thinning activities</p> <p>Fire suppression activities can result in localized resource damage</p>	<p>Reduces risk and extent of uncharacteristic fire</p> <p>Reduces risk to communities and infrastructure</p> <p>Improves firefighter safety</p> <p>Short-term adverse air quality, visual, and noise effects</p>	<p>The Federal Wildland Fire Management Policy (2001) and KNF Fire Management Plan state that firefighter and public safety are first priority on every fire</p> <p>Partner with state and local agencies to achieve mutual goals</p> <p>Need for Firewise information and education</p> <p>Public education is critical to gaining support for appropriate management responses</p>

Ecological or Socio-Economic Need	Potential Management Response	Ecological Results/Change	Social and Economic Results/Change	Management Considerations
<p>Provide opportunities for motorized recreation</p>	<p>Designate motorized roads, trails, and areas</p> <p>Enforce motorized travel regulations</p>	<p>Motorized activity disturbs wildlife and damages vegetation</p> <p>Creates soil disturbance, compaction, and erosion</p> <p>Promotes spread of invasive plants</p>	<p>Creates opportunities for a rapidly growing recreation segment</p> <p>Decreases natural quiet sought by many Forest visitors</p> <p>Creates conflicts with non-motorized Forest uses</p> <p>Potential for damage and disturbance to cultural resources</p> <p>Increases dust and exhaust emissions</p>	<p>Motorized recreation is a component of the KNF recreation niche</p> <p>2005 Travel Management Rule implementation will begin to address this issue</p>
<p>Provide materials for ceremonial and traditional uses</p>	<p>Maintain communications and cooperation with local Tribes</p>	<p>Overuse and off-road motorized activity damages vegetation; may also disturb wildlife</p>	<p>Maintains traditional lifestyles</p> <p>Creates potential for damage to archeological and traditional cultural resources (i.e. plants)</p>	<p>Herbicide use to control invasive species may conflict with traditional uses</p> <p>The 2008 Farm Bill (PL 110-234) makes provisions for traditional tribal use on national forests</p>

Ecological or Socio-Economic Need	Potential Management Response	Ecological Results/Change	Social and Economic Results/Change	Management Considerations
Provide for natural quiet	<p>Designate non-motorized areas and prohibit motorized cross-country travel</p> <p>Recommend increasing wilderness through additional areas or expanding boundaries of existing areas</p> <p>Enforce motorized travel restrictions</p> <p>Increase public education</p>	<p>Protects wildlife sensitive areas for breeding, resting, and wintering</p> <p>Reduces soil disturbance and compaction</p> <p>Protects vegetation, particularly narrow endemic plants</p> <p>Decreases spread of invasive plants</p>	<p>Increases opportunities for undeveloped recreation</p> <p>Provides for wilderness opportunities and experiences</p> <p>Non-motorized recreation better protects heritage sites</p> <p>Reduces opportunities for motorized users</p>	<p>Natural quiet is a component of KNF recreation niche</p>
Provide for developed recreation opportunities	<p>Construct or decommission recreation sites based on visitor use, desired opportunities, and forest capacity</p> <p>Operate developed sites efficiently using Recreation Enhancement Act, concessionaires, volunteers and partnerships</p>	<p>Concentrates recreation use away from critical wildlife and rare plant areas</p> <p>Creates site disturbances</p> <p>Fragments wildlife habitat</p> <p>Promotes spread of invasive species</p>	<p>Provides opportunities for all users to access and use these sites</p> <p>Provides recreation opportunities for diverse populations</p>	<p>Meets KNF recreation niche</p> <p>Follow 5-year plan for Recreation Facility Analysis, including developed site decommissioning</p> <p>Seek partnerships and utilize volunteers to manage developed recreation sites</p> <p>Respond to changes in recreation activities and users</p>

Ecological or Socio-Economic Need	Potential Management Response	Ecological Results/Change	Social and Economic Results/Change	Management Considerations
<p>Provide desirable scenic opportunities</p>	<p>Conduct thinning</p> <p>Conduct appropriate fire management</p> <p>Provide access (e.g., roads, trails, viewpoints, etc.)</p> <p>Protect aspen, oak, other deciduous species, and promote understory growth</p>	<p>Restores fire adapted ecosystems</p> <p>Reduces uncharacteristic wildfire risk</p> <p>Promotes retention of large trees, oak, aspen and other deciduous trees and understory species</p>	<p>Maintains and improves scenic integrity in the long term</p> <p>Maintains and improves recreation settings</p> <p>Creates short term adverse visual effects</p>	<p>Scenery management guidelines may restrict fuel reduction work due to slash disposal needs and timing</p>

Ecological or Socio-Economic Need	Potential Management Response	Ecological Results/Change	Social and Economic Results/Change	Management Considerations
<p>Provide for special uses and events</p>	<p>Provide for appropriate uses that cannot be met off-Forest</p> <p>Develop capacities for specific uses (i.e., jeep tours, OHV tours)</p> <p>Manage non-recreation special uses such as road access and boundary adjustments</p> <p>Develop guidelines</p> <p>Deny requests for projects when we cannot recover costs of NEPA</p>	<p>Concentrates and regulates use</p> <p>Creates site disturbances</p> <p>Increases potential for spread of invasive species</p>	<p>Manages user conflicts</p> <p>Events and concession operations may bring economic benefit to the community and provide services</p>	<p>We are not able to provide for or respond to all requests with our current capacity</p>

Ecological or Socio-Economic Need	Potential Management Response	Ecological Results/Change	Social and Economic Results/Change	Management Considerations
<p>Provide firewood for commercial and private users</p>	<p>Designate appropriate areas for firewood collection</p>	<p>Can promote restoration of historic tree patterns</p> <p>Removes excess down and dead woody debris</p> <p>May reduce down woody debris below desired levels</p> <p>Short term noise and activity disturbs wildlife</p> <p>Promotes spread of invasive species</p>	<p>Provides Forest products for public</p> <p>Creates employment opportunities</p> <p>Promotes economic sustainability</p>	<p>Illegal fuelwood cutting is ongoing, particularly in oak and large junipers</p> <p>Key wildlife habitat components may need protection</p>

Ecological or Socio-Economic Need	Potential Management Response	Ecological Results/Change	Social and Economic Results/Change	Management Considerations
Provide commercial wood products	<p>Prepare and offer commercial Forest products for sale</p> <p>Use collaborative processes to build trust and define areas of agreement</p>	<p>Promotes restoration of fire-adapted ecosystems</p> <p>Commercial operations increase capacity to achieve desired forest structure</p> <p>Creates short-term noise and activity disturbance to wildlife</p> <p>Promotes spread of invasive species</p>	<p>Maintains traditional lifestyles</p> <p>Provides economic benefit to local communities</p> <p>Creates potential for conflict with environmental groups</p>	<p>The potential for over-collection or over-use exists</p> <p>Exercise caution in entering long-term agreements that may reduce management flexibility</p>
Provide habitat for game species and access to quality game habitat	<p>Cooperation with Arizona Game and Fish regarding elk and deer population management</p> <p>Thinning</p> <p>Appropriate fire management</p> <p>Provide access</p>	<p>Restores fire adapted ecosystems</p> <p>Reduces wildfire risk</p> <p>Promotes retention of large trees, oak, aspen and other deciduous trees and shrub species</p> <p>Motorized cross-country travel allowed for game retrieval can lead to soil and vegetation damage</p>	<p>Creates local economic benefit from hunting-related sales</p> <p>Increased access creates potential motorized recreation conflicts (i.e., reduced hunting opportunities due to OHV use)</p>	<p>Hunting is an effective tool for reducing ungulate populations</p> <p>Public desire for high density of elk conflicts with vegetation objectives</p>

Ecological or Socio-Economic Need	Potential Management Response	Ecological Results/Change	Social and Economic Results/Change	Management Considerations
<p>Provide for ranching and traditional lifestyles</p>	<p>Continue to administer and manage grazing permits</p> <p>Monitor grazing impacts to enable adaptive management in the permitting process</p>	<p>Appropriate management minimizes negative ecological effects of livestock</p> <p>Inappropriate livestock management can cause species shifts, soil loss, damage to seeps and springs, reduction of fine fuels which disrupts historic fire regimes, encourages invasive plants, and increases herbivore pressure</p>	<p>Provides economic benefit to local ranchers</p> <p>Maintains traditional lifestyles</p> <p>Potential for damage to cultural resource sites</p> <p>Potential for conflicts with recreation users</p>	<p>Livestock grazing may need further management adjustments in pinyon/juniper woodlands and Great Basin grasslands</p> <p>Repeated monitoring of field conditions is critical to devising and adapting appropriate grazing regulations</p>
<p>Help provide for future energy transmission needs</p>	<p>Utilize and/or improve existing corridors</p> <p>Encourage off-Forest development</p> <p>Evaluate new corridor proposals and provide guidance for development</p>	<p>Creates site disturbances</p> <p>Fragments wildlife habitat</p> <p>Mortality and injury to raptors colliding with lines</p> <p>Promotes spread of invasive species</p> <p>Potential for impacts to narrow endemic species</p>	<p>Contributes to national energy needs</p> <p>Degrades scenic integrity</p> <p>Changes recreation opportunities from undeveloped to developed</p>	<p>The Energy Policy Act of 2005 (and other related policies and directions) encourages the Forest Service to be responsive in helping meet the nation's energy needs</p>

Ecological or Socio-Economic Need	Potential Management Response	Ecological Results/Change	Social and Economic Results/Change	Management Considerations
<p>Provide opportunities for renewable energy - wind and solar</p>	<p>Combine with existing energy corridors</p> <p>Encourage off-Forest development</p> <p>Provide guidance for development</p> <p>Propose withdrawal of sensitive areas</p>	<p>Creates site disturbance</p> <p>Fragments wildlife habitat</p> <p>Promotes spread of invasive species</p> <p>Potential for impacts to narrow endemics species</p> <p>Hazardous to birds and bats</p>	<p>Provides 'clean energy' to the public</p> <p>Contributes to national energy needs</p> <p>Decreases natural quiet due to noise created by wind generators</p> <p>Changes recreation opportunities from undeveloped to developed</p> <p>Degrades scenic integrity</p>	<p>The Energy Policy Act of 2005 (and other related policies and directions) encourages the Forest Service to be responsive in helping meet the nation's energy needs</p>
<p>Provide opportunities for renewable energy - co-generation (i.e., electricity production from wood by-products)</p>	<p>Work with partners to develop agreements to encourage appropriate development</p>	<p>Increases feasibility of doing small-diameter thinning on a large scale</p> <p>See first row of table for other results/changes from forest thinning activities</p>	<p>Provides jobs</p> <p>Supports a diverse economy</p> <p>Creates potential disruption of recreation opportunities and scenic integrity</p> <p>See first row of table for other results/changes from forest thinning activities</p>	<p>Timing and rate of implementation need to be considered to manage short-term effects to species and recreation opportunities</p> <p>Co-generation opportunities increase feasibility of restoration work and reduction of fuel loads</p> <p>Caution must be exercised in making long-term commitments that would reduce flexibility and potentially counterproductive to meeting ecological and socio-economic needs</p>

Ecological or Socio-Economic Need	Potential Management Response	Ecological Results/Change	Social and Economic Results/Change	Management Considerations
<p>Provide increased opportunities for improved communications and service (sites and towers)</p>	<p>Encourage co-location of new sites</p> <p>Consolidate existing sites</p> <p>Encourage off-Forest location</p> <p>Authorize new sites</p> <p>Provide guidance for development</p>	<p>Creates site disturbances</p> <p>Collision with towers and wires is a cause of mortality for birds and bats</p>	<p>Increases public safety emergency communications</p> <p>Changes recreation opportunities from undeveloped to developed</p> <p>Degrades scenic integrity</p>	

FOREST PLAN NEEDS FOR CHANGE

Forest plans provide an adaptive framework to guide on-the-ground management of projects and activities. The findings in the table above show how potential management actions addressing social, economic, and ecological sustainability are interrelated. These relationships are important to consider when determining which of the ecological, social, and economic needs will be emphasized in the development of the revised Forest Plan.

Forest Plan Model

A plan model was developed nationally by reviewing how successful strategic planning is done in businesses and other large organizations. The Plan Model was refined by reviewing planning processes used by other government agencies. The Plan Model is strategic and consists of three interrelated parts: vision (desired conditions), strategy (objectives, suitability of areas, and special areas), and design criteria (guidelines and standards).

There are five components of the Forest Plan Model:

- *Desired conditions* - The social, economic, and ecological attributes toward which management of the land and resources 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 period of time.

Desired condition statements are an essential part of land management plans and serve as a guide for the development of the Forest Plan monitoring program and future actions or activities that are designed to achieve the conditions over time. Desired conditions, together with the other plan components, constitute a framework for sustainability and are intended to clearly articulate management intent over the life of the Plan.

- *Objectives* - The concise projections of measurable, time-specific intended outcomes that make progress toward desired conditions. Like desired conditions, objectives are aspirations and not commitments or final decisions.
- *Guidelines or Standards* - Information and guidance for project and activity decision-making to help achieve desired conditions and activities. A forest plan should have guidelines and may include standards. The primary difference between these tools is that guidelines allow for some flexibility in how closely they are followed in project design, as long as the intent is met and the rationale is documented in the decision document. Standards require strict adherence to the letter of the standard or a plan amendment would be required.
- *Suitability of Areas* - Identification of the general suitability of lands for multiple uses that are compatible with the desired conditions and objectives for that area. Such identification is guidance for project and activity decision-making, is not a permanent land designation, and is subject to change through Forest Plan amendment or revision.
- *Special Areas* - Areas that are designated because of their unique or special characteristics, such as botanical or geologic areas. The Forest Plan may also recognize other special areas that can only be designated by statute and with additional NEPA documentation, such as Wilderness or Wild and Scenic Rivers.

Monitoring is not a Forest Plan component, but it will be described in the Forest Plan and a monitoring program will be developed and incorporated in the Forest Plan set of documents. The monitoring program may be adjusted without a Forest Plan amendment.

Current Kaibab National Forest Plan

The current Forest Plan was approved in 1988 and has been amended seven times since. One amendment (1996) was significant, changing the desired condition for forests to a much older, larger, and uneven aged state. With this change, a number of “outputs” from the Plan area became more integrated, particularly with regard to visual quality, old growth, and timber production. Consistent with the original concepts of forest planning and the 1982 Planning Rule, much of the guidance in the current plan is tactical and prescriptive, focused on “outputs” and “how to” do projects rather than on “outcomes” that should be attained.

The current Plan addresses uses and resources separately without recognition of interrelationships. As a result, management direction is lacking when guidance is needed to deal with more complex situations. For example, appropriate management responses following uncharacteristic fires need to consider the interactions between soils, vegetation/structure, coarse woody debris, cultural resources, economics, and work capacity. In some cases, management under the current Plan is appropriate, but the rate of implementation is too slow to alter the direction of trends that are moving away from desired conditions.

The Plan Model format is more integrated and better displays where direction is lacking and gaps exist. Because this forest plan revision is based on the need for change in the current Forest Plan, rather than starting over, the current Forest Plan was reorganized into the Plan Model format. This process illuminated gaps in the existing Plan, pointing to potential needs for change.

Desired Conditions:

- are missing for “geographic areas” – large contiguous areas of the Forest that are identified and used in ways that differ from adjacent geographic areas;
- are either missing or inadequate to guide projects in many of the Forest’s PNVTs and Special Areas, which allows for projects to move forward that do not make progress towards desired conditions;
- are missing for culturally important areas, such as Red Butte;
- are missing for invasive species presence or influence;
- are vague about wetlands, particularly ephemeral wetlands;
- do not integrate desired disturbance processes;
- are sometimes written as standards and/or guidelines, rather than desirable conditions to move toward; and
- guidance for collaboration and partnerships is hard to find and is not integrated.

Objectives:

- are focused on outputs, rather than progress toward desired conditions;
- have inconsistent definitions and guidance for wildland-urban interface areas.

Standards and/or Guidelines:

- provide minimal guidance for mineral exploration and development;
- are often unnecessarily prescriptive about how to accomplish a project, instead of focusing on the project outcome;
- do not support attaining desired conditions or accomplishing objectives;
- are sometimes duplicative or conflict with direction already found in Forest Service handbooks and manuals, existing laws and regulations, or recovery plans and strategies for federally listed species;
- are based on outdated policy, science, or information;
- in some cases describe purely administrative functions, such as budgeting, rather than Plan components and can be confused with Plan direction; and
- require the use of metrics that are difficult to practically use, such as canopy closure rather than more commonly used and consistent measures like basal area..

Monitoring:

Focuses on outputs, rather than on progress toward attainment of desired conditions. An adaptive monitoring plan, is not a Plan component but is a required part of the Plan set of documents. Monitoring is needed that supports adaptive management, focusing on outcomes and progress toward desired conditions rather than outputs.

MANAGEMENT REVIEW RESULTS

An internal Management Review of this CER was conducted in December of 2008 to determine which needs for change issues would be carried forward into plan revision. After discussions about the integrated management needs for change, the intent of the 2008 Planning Rule, and the capacity of the Kaibab National Forest, the Forest Leadership Team identified four priority topics that will serve to focus the scope of this plan revision. These topics reflect the priority needs and potential changes in program direction that will be emphasized in the development of Forest Plan components.

Priority Needs for Change

1. **Modify stand structure and density towards reference conditions and restore historic fire regimes.**

There is a high ecological and socio-economic need to reduce the risk of uncharacteristic fires. This, combined with the concordance of multiple ecological, social, and economic benefits, made this the primary area of focus. Specific tasks include identifying desired conditions for forested ecosystems on the KNF consistent with the Regionally-developed desired conditions and setting treatment objectives for wildland-urban interface (WUI) and non-WUI areas. Strong scientific and public support and funding is increasingly available for this kind of work. Several collaborative initiatives by third parties that could support forest restoration are either underway or proposed. To assure efficiency and effectiveness, broad agreement with stakeholders about where, how, and at what rate restoration should occur still needs to be determined.

2. **Protect and regenerate aspen.**

There has been widespread aspen decline in the Southwest, and aspen plays an important role in providing local habitat diversity and scenery. On the Williams District there has been very little successful regeneration recently. Although there is a relative low ecological need across the Forest, or within the White Mountains-San Francisco Peaks-Mogollon Rim Section, aspen is important to local ecological diversity and has a high social and economic value. Because there are different management needs on the different districts, aspen will be addressed within the context of the desired conditions where it occurs (ponderosa pine, mixed conifer, and spruce-fir).

3. **Protect seeps, springs, ephemeral wetlands, and North Canyon Creek.**

The current Forest Plan offers little guidance for managing these rare and ecologically important resources. Actions to protect natural waters are relatively inexpensive and easy to accomplish, provide important benefits, and have a high concordance with social and economic needs.

4. **Restore grasslands; reduce tree encroachment in grasslands and meadows.**

Grasslands are much less abundant than they were historically, which reduces the amount of available habitat for grassland-associated species. The subalpine/montane grasslands on the North Kaibab Ranger District are linear and as a result are at a higher risk of loss because trees

encroach from the edges and the openings close more quickly. There is a need to develop desired conditions and set objectives for grassland ecosystems on the KNF. Currently, these are lacking in the existing Forest Plan. Generally, there is strong public support for this type of work.

Other Needs for Change Topics

The Forest leadership team considered and discussed several other plan needs for change. There was recognition that the following topics need to be addressed with plan components, but these were not identified as priority needs for change topics.

1. Develop a consistent response to uncharacteristic wildfire and other disturbances.

Because there has been a trend toward more and larger uncharacteristic fires, this has emerged as an important topic. After large uncharacteristic events, there is a need to act in order to protect existing resources and set conditions on a trajectory toward desired conditions. There is a need for a consistent, efficient, scientifically-based response to uncharacteristic wildfire and other disturbances. Objectives and guidelines are needed to address actions in the years immediately following large disturbance events (e.g., 5-15 years post-event). Desired conditions would generally remain the same as prior to the disturbance, except in cases where the environment has been so altered that the desired conditions are no longer obtainable. Uncertainty about the effects of removing excess dead woody material has led to distrust from the public and environmental communities. As a result, this process would best be served by a collaborative, adaptive approach.

2. Provide a balanced range of recreation opportunities, within the limits of administrative and resource capacity.

Desired conditions, objectives, and possibly guidelines are needed to manage motorized recreation, natural quiet, developed recreation, dispersed recreation (hunting), special uses and events, and outfitter guides. There is also a need to update the existing Visual Quality Objectives (VQO) language and layers to the Scenery Management System (SMS) for the North Kaibab Ranger District.

3. Develop desired conditions and objectives for Wilderness to guide the development of Wilderness Management Plans.

Address the management authority for shared wildernesses with the Coconino NF so that there is clear direction. Review the results of the Wilderness Needs Assessment and eligibility of Kanab Creek as a Wild and Scenic River. Where necessary, further evaluation will be conducted to consider and recommend potential wilderness, and to develop plan components in support of Wilderness management and the Chief's Wilderness challenge.

4. Provide guidance for managing energy corridors and development requests.

Requests to use federal lands for energy development have rapidly accelerated in the past few years, including energy transmission corridors, wind farms, and solar energy development. There is some direction for energy corridors, but none for wind/solar farm proposals that may be received.

Develop guidance for mining exploration and development.

The Forest has had a recent spike in mineral exploration proposals, particularly for uranium on the Tusayan RD. These proposals include areas with high cultural value to local Tribes and areas close to the Grand Canyon NP. There is little direction in the Plan to guide the development of appropriate mitigation and minimization measures. Areas of traditional cultural use may be identified as Special Areas in the Plan. Plan components that guide the management of these areas could be considered in support of mineral withdrawal recommendations to the BLM. There is a bill (HB 644) currently in Congress to withdraw the Tusayan Ranger District from location, entry, and patent under the mining laws.

5. Provide guidance for travel management implementation.

The current Plan has some direction for managing off-highway vehicles, including identification of areas to be closed. However, the Forest is in the process of making decisions on each of its three Ranger Districts about routes open to motorized vehicles and permissible off-route travel. Clear and consistent direction for travel management implementation is needed in the Plan.

6. Provide guidance for special use management permitting and special forest products collection.

The demand for various forest products is rising nationally and, in some cases, locally. Nationally, the Forest Service has published but, per Presidential directive, has not implemented a final rule that addresses fees, bidding, sustainability, and other issues with commercial harvest and sale of special forest products and forest botanical products. The new rule reflects existing procedures and practices. Plan direction to address national direction and agreements contained in Forest memoranda with Tribes is needed.

Additional potential plan needs for change were raised internally, by partners, and the public. Some of these items will be addressed in the Plan with plan components. Others may not be carried forward into this plan revision because they are low priority, not ripe for action, or not supported by scientific information. A “bin” has been created so that these and other potential Plan changes may be retained and revisited in future planning efforts. The bin is intended to be a living document that can continue to be built as new information and feedback is received. (Appendix 6).

This CER used the best information available at the time it was prepared. It is recognized that new information will become available and our understanding will change. Forest Plans are intended to be adaptive, and CERs are to be prepared at least every five years. This iterative and ongoing process will facilitate the incorporation of new information and inform future Plan needs for change.

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Appendix 1. Threats to species diversity associated with fine-scale habitat features and the number of Forest Planning species potentially affected.

Threats to Species Diversity	Potential Outcome	# Species
Threats to tree features include loss of snags, debris removal, uncharacteristic fire, wood collection.	Loss of roost and nest sites for bats and cavity nesting birds. Decreased foraging opportunities and reduced habitat for small mammals, snakes and birds. Can lead to widespread population declines within the planning area	18
Threats to forest features include uncharacteristic fire, loss of deciduous trees/shrubs, loss of canopy layering, fire suppression, and excessive overstory tree removal.	Direct loss of habitat, loss of nesting/roosting and foraging sites can lead to population declines within the planning area	15
Threats to understory features include non-native grass invasion, overgrazing, fire regime,	Decrease in available forage and foraging sites	2
Threats to shrubland features include overgrazing, drought, woodland invasion.	Loss of habitat and decrease in available forage and nesting sites	4
Threats to wetland/water features include wetland drainage and spring capping, flood scouring, overgrazing near water.	Direct loss of habitat, loss of forage opportunities, decrease in reproductive sites	9
Threats to grassland features include drying of moist meadows, too much bare ground, and loss of forbs.	Loss of foraging opportunities/prey base	11
Threats to rock and other abiotic features include rock collection, cliff blasting, recreational rock climbing/caving, demolition of buildings used as roost sites	Loss of hibernacula suitability and nesting sites can lead to decreased reproductive status for snakes, bats, birds, and small mammal species	15
Soil disturbance such as activities of livestock, people, or machinery that result in compaction, churning, and/or erosion.	Can inhibit plant germination and/or growth and vigor.	49
Inappropriate livestock grazing	Can exceed a species ability to regenerate and reproduce, encourage invasive species, and alter growing conditions.	13
Excessive wildlife herbivory	Can exceed a species ability to regenerate and reproduce, and alter growing conditions	5
Removal of overstory (e.g., inappropriate timber removal, insect/disease mortality) is relevant to plants that need cool, shady site conditions.	Can inhibit plant reproduction and/or growth and vigor.	1
Dewatering or channelization lowers the water table.	Can inhibit plant reproduction and/or growth and vigor.	3

Appendix 2. Additional species diversity threats not associated with habitat features and the number of Forest Planning species potentially affected.

Species Threats Not tied to Habitat Features	Potential Outcome	# Species
Invasive species interactions	Competition for resources (food, space, water), and/or hybridizations can lead to direct mortality and decreases in populations within the planning area, loss of native species and changes in vegetation structure	28
Poisoning/pesticide use	Direct mortality and local to widespread population declines	5
Disease	Direct mortality and local to widespread population declines	5
Cowbird parasitism	Decrease in nesting success, local population declines	1
Development (housing, agriculture, roads, fences)	Local population declines, possible isolation of species and restrictions on species interactions	4
Crushing by livestock, people, or machinery; often associated with soil disturbance events.	Direct mortality, can lead to widespread population declines of narrow endemics	23
Activities associated with infrastructure construction and maintenance (e.g., cliff blasting, road work).	Direct mortality, can lead to widespread population declines of narrow endemics	3
Misidentification as a weed during weed eradication	Direct mortality	1
Slash piles/burning in forest openings	Direct mortality	1
Uranium exploration/mining	Direct mortality and population decline	1

Appendix 3. Significantly departed ecosystem characteristics and related management response issues.

Ecosystem	Significant Departure Characteristics	Significant Contributing Activities	Possible Management Response	Notes
Pinyon Juniper Woodland	Tree densities higher, more continuity of canopy, increased pine beetle activity, loss of understory, invasive species.	Past fire suppression and past managed grazing. Current wildfires and drought.	Fire suppression when crown fire risk is moderate or high across large areas. Density reduction in characteristic patterns. Weed control.	This PNVT includes PJ-grassland, PJ-shrubland, and PJ-woodland. They may require separate management approaches.
Ponderosa Pine	Tree densities higher. More young states.	Past fire suppression, grazing, and tree cutting practices. Current wildfires and drought.	Fire suppression when crown fire risk is moderate or high. Canopy density and fuels reduction in characteristic patterns. Regeneration in characteristic patterns. Retain most older/larger trees.	Trend is “Stable” because it can not depart any further by the analyses used. However, uncharacteristic fires and other disturbances that kill many large or old trees will increase the time it would take to restore this PNVT. Elk are preventing aspen recovery within much of the WM-SFP-MR Section; mitigation (although expensive) is possible.
Mixed Conifer Forests	Tree densities higher. Species abundance shifts. More young states.	Past fire suppression, grazing, and tree cutting practices.	Fire suppression when crown fire risk is moderate or high. Tree density and fuels reduction in characteristic patterns and species composition. Regeneration in characteristic patterns and species composition. Retain most older/larger trees.	Uncharacteristic fires and other disturbances that kill many large or old trees will increase the time it would take to restore this PNVT. Elk are preventing aspen recovery within much of the WM-SFP-MR Section; mitigation (although expensive) is possible.

Ecosystem	Significant Departure Characteristics	Significant Contributing Activities	Possible Management Response	Notes
Sagebrush Shrubland	Increasing shrub density/continuity and juniper encroachment. Loss of understory species abundance and species abundance shifts. Invasive species.	Past fire suppression, past and current unmanaged grazing.	Reintroduce fire to reduce shrub density, recycle nutrients and control juniper encroachment. Other practices to control shrub density and weeds may also be required. Modified wildlife management (bison) and managed grazing practices may also be necessary.	Response to fire depends on sage species – some species regenerate well after fire, and others do not. KNF likely has both types, but distribution on the Forest is unknown. Expected response and appropriate action should be determined before using fire to manage sagebrush shrublands.
Montane / Subalpine Grassland	Increasing shrub density and conifer encroachment.	Past fire suppression and past managed grazing. Current unmanaged grazing may also be a threat.	Reintroduce fire to reduce shrub density, recycle nutrients and control conifer encroachment. Other practices to control shrub density may be required first. Modified grazing practices may be necessary first, but may prove ineffective with continued pressure from elk.	The percent of departure over time from tree encroachment into subalpine meadows may be higher in the Grand Canyon Section because of the linear shape of meadows on the Kaibab Plateau. These subalpine meadows may also require a management approach different from the approach used in montane grasslands in other parts of the Forest.
Colorado Plateau / Great Basin Grassland	Increasing shrub density and juniper encroachment.	Past fire suppression and past/current ungulate grazing (managed & unmanaged).	Reintroduce fire to reduce shrub density, recycle nutrients and control juniper encroachment. Other practices to control shrub density may be required first. Modified grazing practices may be necessary first, but may prove ineffective with continued pressure from elk.	No other concerns regarding this PNVT were raised.

Ecosystem	Significant Departure Characteristics	Significant Contributing Activities	Possible Management Response	Notes
Spruce-Fir Forest	Canopy densities higher. More continuous dense canopy. Species abundance shifts. Loss of older tree states in some areas.	Past fire suppression and tree cutting practices.	Fire suppression when crown fire risk is high until canopy density and fuels reduction produces characteristic patterns and species composition. Regeneration in characteristic patterns and species composition. Retain older trees.	Much of this PNVT may have historically been Mixed Conifer forest. Since fire exclusion, a shift towards Engelmann spruce and corkbark fir has been documented.
Semi-Desert Grassland	Increasing shrub density and juniper encroachment.	Past fire suppression, past and current managed / unmanaged grazing.	Reintroduce fire to reduce shrub density, recycle nutrients and control juniper encroachment. Other practices to control shrub density may be required first. Modified wildlife management (bison) and managed grazing practices may also be necessary.	Approximately half of this PNVT is on the Buffalo Ranch and may not be subject to FS habitat management control under the existing MOU with the Arizona Game and Fish Department. A portion of land near the Buffalo Ranch may actually be a Black Sagebrush PNVT.
Desert Communities	Increased invasive plants. Decreased FRI. Increased shrub/juniper canopy cover.	Past managed / unmanaged herbivory; invasive plants.	Reduce density of shrubs and junipers. Control invasive plants. Keep fires as small as possible.	This PNVT is entirely within the Kanab Creek Wilderness.
Gambel Oak Shrubland	Canopy densities higher. More continuity of canopy. Invasive plants.	Past fire suppression. Introduction of invasive plants.	Reintroduce fire to reduce canopy density and break up continuity, recycle nutrients and control conifer encroachment. Other practices to control density may be required first.	No other concerns regarding this PNVT were raised.

Ecosystem	Significant Departure Characteristics	Significant Contributing Activities	Possible Management Response	Notes
Wetland / Cienega	Increased tree cover. Invasive plants. Decreased FRI. Decreased water flow (surface / sub-surface.)	Past fire suppression and past managed grazing. Current unmanaged grazing may also be a threat, as is motorized recreation.	Reintroduce fire to reduce tree density/encroachment. Other practices to control tree density may be required first. Reduce tree density of adjacent PNVTs. Enforce closures to motorized vehicles and repair damage.	Drought especially compounds the effects of grazing and increased tree density in and around this PNVT.
Cottonwood Willow Riparian Forest	Loss of flooding disturbance and perennial stream flow. Loss of tree structure and native species especially cottonwood and willow.	Upstream impoundments-diversions. Introduction of non-native trees/shrubs. Past and occasional current livestock use.	Control invasive species. Keep fires as small as possible; educate visitors about campfire use/impacts. Remove unauthorized livestock.	This PNVT is entirely within the Kanab Creek Wilderness. Tamarisk leaf beetle (<i>Diorhabda elongata</i>) may move into this PNVT within a few years and begin reducing tamarisk without FS action.
Seeps and Springs (i.e., natural water sources)	11 of 22 fifth-code watersheds have notably degraded water quality and/or riparian and wetland conditions. About half of the seeps and springs on the Forest show some degradation.	Past and current livestock and elk use, disrupted fire regimes, impoundments, and invasive species. High risk of erosion and sedimentation following uncharacteristic fire.	Reduce risk of uncharacteristic fire by employing appropriate fire management practices for PNVTs associated with the seeps and springs (see above in this table). Fence livestock, and perhaps elk, out of seeps and springs where appropriate.	Riparian and aquatic systems in arid landscapes are centers of high biological diversity. Wildlife activity is more concentrated around open water sources than in the general landscape, and obligate aquatic and semi-aquatic species on the Forest are entirely dependent on the Forest's limited and scattered water sources.

Appendix 4. Harmony between Ecological and Socio-Economic Needs for Change.

Ecosystem	Ecological Need for Change	Socio-Economic		Notes
		Concordance	Discordance	
Pinyon Juniper Woodland	<ol style="list-style-type: none"> Tree density reduction in characteristic spatial patterns <ul style="list-style-type: none"> Increased understory diversity Decreased unsatisfactory watershed condition Natural processes not inhibited by invasive plants. 	<ul style="list-style-type: none"> Increased demand for Forest products (from increased local populations) Improvement of scenic integrity Promotes diverse economy related to wood products and other Forest products (pine nuts; tribal gathering) Traditional and cultural lifestyles and activities (ranching, hunting, personal use fuelwood) Partnership opportunities (AZ G&F, NGOs, Permittees). Protect heritage resources from high intensity fires. Maintain dispersed recreation opportunities in shoulder/winter seasons. 	<p>Large and old trees targeted by illegal wood cutting.</p>	<ul style="list-style-type: none"> Minerals/sandstone occur in PJ (Williams RD), uranium claims (Tusayan RD). Utility corridors (pushed to PJ or other low-elevation areas. Associated roads are weed routes, too.)
Ponderosa Pine	<ol style="list-style-type: none"> Tree density reduction in characteristic uneven aged patterns <p>Restore high frequency, low intensity fire.</p> <ul style="list-style-type: none"> Increased understory diversity. Decreased unsatisfactory watershed condition. Retain older trees. Allow for fine scale variation in tree density. 	<ul style="list-style-type: none"> Increased demand for recreation opportunities in these forest types. Maintenance and improvement of scenic integrity. Protect recreation opportunities from high intensity fire. Promotes diverse economy related to wood products and recreation special uses. Supports traditional and cultural lifestyles and activities (ranching, logging, personal use firewood – oak) 	<ul style="list-style-type: none"> Air quality and smoke management concerns. Elk herbivory of rapidly decreasing aspen populations and regeneration. 	<ul style="list-style-type: none"> Land exchanges, ELGA, land sale proposals. Minerals/ uranium claims (Tusayan RD). Desire for natural quiet.

Ecosystem	Ecological Need for Change	Socio-Economic		Notes
		Concordance	Discordance	
	<ul style="list-style-type: none"> • Increase recruitment of rare deciduous trees (i.e.: aspen, AZ walnut). • Retain large diameter Gamble oak. • Retain most large, older live and dead trees 	<ul style="list-style-type: none"> • Protect private inholdings and communities from high intensity fire. • Protects Forest watersheds. • Continue/restore fall color viewing. • Cooperative hazardous fuels reduction with adjacent land owners. 		
Mixed Conifer Forests	<p>1. Tree density reduction in characteristic uneven aged patterns</p> <ul style="list-style-type: none"> • Restore historic fire return intervals. • Increased understory diversity. • Retain older trees. • Allow for fine scale variation in tree density. • Increase recruitment of rare deciduous trees (i.e.: aspen). • Retain most large, older live and dead trees 	<ul style="list-style-type: none"> • Maintain dispersed recreation opportunities. • Maintenance and improvement of scenic integrity. • Protect watershed, recreation opportunities and facilities infrastructure from high intensity fire. • Promotes diverse economy related to wood products and recreation special uses. • Supports traditional and cultural lifestyles and activities (logging, ranching, tribal uses) • Continue/restore fall color viewing. • Partnership opportunities for aspen recruitment and retention. 	Biological opinion prohibits wild land fire use Air quality and smoke management concerns	
Sagebrush Shrubland	<ul style="list-style-type: none"> • Desired conditions are probably variable by subspecies. <p>Treatments should be low priority.</p> <ul style="list-style-type: none"> • Reduce juniper encroachment <p>Natural processes not inhibited by invasive plants.</p>		Management that has reduced sagebrush extent.	<ul style="list-style-type: none"> • Minerals/uranium claims (Tusayan RD). • Utility corridors (pushed to PJ or other low-elevation areas. Associated roads are weed routes, too.)

Ecosystem	Ecological Need for Change	Socio-Economic		Notes
		Concordance	Discordance	
Montane / Subalpine Grassland	<ol style="list-style-type: none"> 1. Reduce conifer encroachment into meadows. 2. Need different desired conditions for Subalpine (NKRD) and montane grasslands (SZ). 3. Subtle differences between ecological conditions in the grasslands need to be considered on a project level. 4. Promote historic high frequency fires. 5. Control managed grazing. 6. Garland Prairie Research Natural Area designation. 7. Natural processes not inhibited by invasive plants. 8. Suitability for land exchanges. 	<ul style="list-style-type: none"> • Highly important scenic integrity. • Value of historic landscape. • Highly important for wildlife viewing and hunting. • Land exchanges to obtain important wildlife corridors. • Connectivity of habitat helps to maintain grassland wildlife species. 	<ul style="list-style-type: none"> • Some local residents prefer conifers coming into the meadows. • Areas are desirable for housing development and often have private land parcels or are sought for land exchanges. • Reference conditions may be not desired conditions due to demand for managed grazing. 	<ul style="list-style-type: none"> • Information/education is needed in order to restore fire regime.
Colorado Plateau / Great Basin Grassland	<ol style="list-style-type: none"> 1. Reduce conifer and shrub encroachment. 2. Promote historic high frequency fires. 3. Natural processes not inhibited by invasive plants. 4. Control managed grazing. 	<ul style="list-style-type: none"> • Important for hunting opportunities. • Value for scenic integrity. 	<ul style="list-style-type: none"> ○ Reference conditions may be not desired conditions due to demand for managed grazing. • Number of desired waters. 	<ul style="list-style-type: none"> • Minerals/ uranium claims (Tusayan RD), sandstone (Williams RD). • Utility corridors (pushed to other low-elevation areas. Associated roads are weed routes, too.)
Spruce Fir Forest	<ol style="list-style-type: none"> 1. Tree density reduction in characteristic patterns and characteristic species <ul style="list-style-type: none"> • Restore historic fire regime of mixed severity fires. 	<ul style="list-style-type: none"> • Maintain dispersed recreation opportunities. • Maintenance and improvement of scenic integrity. • Protect watershed, recreation opportunities and facilities 	<p>Biological opinion prohibits wildland fire use</p> <p>Air quality and smoke management concerns</p>	

Ecosystem	Ecological Need for Change	Socio-Economic		Notes
		Concordance	Discordance	
	<ul style="list-style-type: none"> Increased understory diversity. Retain older trees. Allow for mid-scale variation in tree density. Increase recruitment of rare deciduous trees (i.e.: aspen). Retain most large, older live and dead trees Allow wildland fire use fires to behave in a boundaryless fashion (NKRDR). 	<p>infrastructure from high intensity fire.</p> <ul style="list-style-type: none"> Promotes diverse economy related to wood products and recreation special uses. Supports traditional and cultural lifestyles and activities (logging, ranching, tribal uses) Continue/restore fall color viewing. 	Cone collection	
Semi-Desert Grassland	<ol style="list-style-type: none"> Reduce conifer and shrub encroachment. Promote historic high frequency fires. Develop desired conditions for this type. 	<ul style="list-style-type: none"> Economically important for hunting opportunities and grazing. Important scenic integrity. 	The reference condition received little pressure from grazing.	<ul style="list-style-type: none"> Minerals/ uranium claims (Tusayan RD) <p>Refer to pediocactus conservation agreement prior to management.</p>
Desert Communities	<ol style="list-style-type: none"> Keep fires as small as possible. Reduce density of junipers and shrubs. Control invasive species (cheat grass) Need desired conditions for this PNVT (use capacity?). 	<ul style="list-style-type: none"> Maintenance and improvement of scenic integrity. Maintain dispersed recreation opportunities and natural quiet. 	Increased recreation use impacts heritage resources. Biotic soil crusts damaged from foot, equestrian, and pack animal use.	
Gambel Oak Shrubland	<ol style="list-style-type: none"> Reduce conifer encroachment. Restore historic fire return intervals and intensity in the surrounding these clumps. Monitor invasives. Need desired 	<ul style="list-style-type: none"> Contributes to scenic integrity. Tribal uses 		

Ecosystem	Ecological Need for Change	Socio-Economic		Notes
		Concordance	Discordance	
	conditions for this ecosystem.			
Wetland/Cienega	<ol style="list-style-type: none"> 1. Reduce conifer encroachment in these areas and in adjacent ecosystems. 2. Need desired conditions for this ecosystem. 3. Restore historic fire frequencies in the surrounding areas. 	<ul style="list-style-type: none"> • Highly important scenic integrity. • Value of historic landscape. • Highly important for wildlife viewing. • Provides a variety of rec opportunities. • Maintain fencing. 	<ul style="list-style-type: none"> • Motorized travel may interrupt flow regimes and degrade habitat. 	<ul style="list-style-type: none"> • High priority for education/information and law enforcement regarding TMR.
Cottonwood Willow Riparian Forest	<ol style="list-style-type: none"> 1. Control invasive species (tamarisk). 2. Fire should be kept as small as possible. 3. Restore native willow/cottonwood with non-mechanical methods. 4. Need desired conditions for this ecosystem. 	<ul style="list-style-type: none"> • Provides recreation opportunities, as well as wilderness values • Highly important scenic value. • Important for wildlife viewing. • Cultural value. 	<ul style="list-style-type: none"> • Camping below deciduous trees increases risk of fire. 	<ul style="list-style-type: none"> • Damage from unauthorized grazing trespass on ecosystem.
Seeps and Springs	<ol style="list-style-type: none"> 1. Restore natural flow regime and density of adjacent vegetation. 2. Re-establish associated aquatic vegetation. 3. Need desired conditions for this ecosystem and objectives. 4. Establish and maintain barriers to managed grazing. 	<ul style="list-style-type: none"> • Provides recreation opportunities. • Highly important scenic value. • Important for wildlife viewing. • Cultural value. • Value of historic landscape. 	<ul style="list-style-type: none"> • Damage to flow regime and habitat from motorized recreation. 	<ul style="list-style-type: none"> • High priority for education/information and law enforcement regarding TMR.

APPENDIX 5 Harmony between Socio-Economic and Ecological Needs for Change.

Social and Economic Need	Concordance with Ecological Sustainability	Discordance with Ecological Sustainability	Notes
Energy Development and Transmission, and Communications			
National direction for energy development and transmission	•	<ul style="list-style-type: none"> • Site disturbance • Wildlife habitat fragmentation • Spread of invasive species • Loss of endemic species of local importance 	<ul style="list-style-type: none"> • Loss of scenic integrity • More developed ROS • Provision of energy to public • Reduction of grazing opportunities
Provide opportunities to mine uranium deposits	•	<ul style="list-style-type: none"> • All above, and • Change in water quality (ck Cyn Mine) 	<ul style="list-style-type: none"> • Tribal concerns • Loss of traditional cultural properties • More developed ROS • Reduction of grazing opportunities
Provide opportunities for renewable energy (wind, solar, co-generation)	<ul style="list-style-type: none"> • Co-generation opportunities increase feasibility of restoration work and reduction of fuels loads 	<ul style="list-style-type: none"> • See #1 above, and • Loss of birds and bats (wind) 	<ul style="list-style-type: none"> • Noise (wind) • More developed ROS • Loss of scenic integrity • Reduction of grazing opportunities
Provide for transmission of energy	<ul style="list-style-type: none"> • Increase in grasslands habitat in some locations 	<ul style="list-style-type: none"> • See #1 above, and • Loss of raptors and birds 	<ul style="list-style-type: none"> • More developed ROS • Loss of scenic integrity
Provide improved communications and service (cell towers)	•	<ul style="list-style-type: none"> • See #1 above. 	<ul style="list-style-type: none"> • Improved communications • Improved health and safety • More developed ROS • Loss of scenic integrity

Reintroduction of Fire			
Wildland-urban interface (WUI)	<ul style="list-style-type: none"> • Restoration of fire adapted ecosystems • Reduction of fuel loads • Reduction of wildfire risk 	<ul style="list-style-type: none"> • Lower levels of small mammal habitat • Spread of invasive weeds 	<ul style="list-style-type: none"> • Need for information and education
Non-WUI	<ul style="list-style-type: none"> • See #1 above 	<ul style="list-style-type: none"> • Spread of invasive 	<ul style="list-style-type: none"> • See above
Ability to suppress uncharacteristic wildfire	<ul style="list-style-type: none"> • Prevention of severe fire effects • Protection of natural resources 	<ul style="list-style-type: none"> • Limited ability to use fire management for resource benefits 	<ul style="list-style-type: none"> • See above

Reintroduction of Fire			
Support for management ignited fire and wildland fire use	<ul style="list-style-type: none"> • See #1 above 	<ul style="list-style-type: none"> • Limited ability to use fire management for resource benefits 	<ul style="list-style-type: none"> • See above, and • Partnership opportunities with other agencies and private land owners
Forest Services and Products			
1. Provide opportunities for motorized recreation	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Increased noise and disturbance of nesting and fawning areas • Damage to wet meadows • Soil disturbance and compaction • Loss of hydrological processes 	<ul style="list-style-type: none"> • Reduction of natural quiet • Conflicts between users • Opportunities for a growing recreation segment (motorized users) • Heritage site damage and disturbance • Meets recreation niche
2. Need for natural quiet	<ul style="list-style-type: none"> • Improved wildlife habitat • Undisturbed areas for ecological processes 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Provide for non-motorized recreation opportunities • Provide for wilderness opportunities and experiences • Non-motorized recreation better protects heritage sites • Meets recreation niche
3. Provide for developed recreation opportunities	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Site disturbance • Loss of wildlife habitat • Spread of invasive species • Damage to wildlife roosts and nests from use of caves and cliffs 	<ul style="list-style-type: none"> • Meets recreation niche • Provides opportunities for all users to access and use these site • Provides opportunities for diverse populations • Provides for more developed ROS
4. Special uses and events	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Site disturbance • Loss of wildlife habitat • Spread of invasive species 	<ul style="list-style-type: none"> • User conflicts
5. Enjoyment of forest scenery	<ul style="list-style-type: none"> • Restoration of fire adapted ecosystems • Reduction of wildfire risk • Retention of oak, aspen and other deciduous trees and shrub species 	<ul style="list-style-type: none"> • Fuel reduction (slash disposal) timing 	<ul style="list-style-type: none"> •

Reintroduction of Fire			
6. Provide hunting opportunities	<ul style="list-style-type: none"> • Elk population management • Turkey habitat improvements support restoration of fire adapted ecosystems 	<ul style="list-style-type: none"> • Management of unsuitable levels of elk • Provision of new waters for wildlife that increases animals ranges and impacts timing and intensity of browse 	<ul style="list-style-type: none"> • Motorized recreation conflicts • Motorized game retrieval
7. Provide for ranching and traditional lifestyles	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Species shifts (loss of cool season grasses, trampling of plants) • Threatened and endangered species • Soil loss • Damage to springs and seeps • Wildlife conflicts • Reduction of fine fuels that carry fire • Increased herbivore and browse pressure • Site disturbance 	<ul style="list-style-type: none"> • Maintain traditional lifestyles • Damaged to heritage sites • Conflicts with recreation users
8. Provide firewood for commercial and private users	<ul style="list-style-type: none"> • Ability to reduce fuel loads 	<ul style="list-style-type: none"> • Decreased snags, down logs, oaks • Reduces bat habitat and cavity nesting birds • Reduces habitat for small cavity nesting mammals 	<ul style="list-style-type: none"> • Damage to heritage sites • Provides economic opportunities • Sustains local communities by providing firewood for heating
9. Provide commercial wood products	<ul style="list-style-type: none"> • Restoration of fire adapted ecosystems • Fuels reduction • Improved ability to implement management activities to these ends (more affordable) 	<ul style="list-style-type: none"> • Spread of invasive species 	<ul style="list-style-type: none"> • Perception of corrupt management by some interest groups • Use of Forest products for public good • Employment opportunities • Economic sustainability
10. Provision of materials for ceremonial and traditional uses	<ul style="list-style-type: none"> • Desire for sustainability of ecosystem 	<ul style="list-style-type: none"> • Potential for over collection or over use 	<ul style="list-style-type: none"> • Maintain traditional lifestyles

Desire for Additional Private Land			
1. Provide land for schools and communities (Town site Act and Educational Land Grant Act)	•	<ul style="list-style-type: none"> • Loss of habitat • Loss or damage to threatened and endangered species • Increased WUI 	<ul style="list-style-type: none"> • Heritage resources are lost from public ownership
2. Desire for more private land for development	<ul style="list-style-type: none"> • Opportunities for more contiguous ownership • Protection of ecologically valuable land 	<ul style="list-style-type: none"> • See above 	<ul style="list-style-type: none"> • See above

Appendix 6. Potential Forest Plan Needs for Change - Bin List

This section of the report contains a list of other potential Forest Plan needs for change that have been raised through the Forest Plan revision process to date. Some of these items may be carried forward into the proposed revised Forest Plan. Other items that are either lower priority or not ripe may not be carried forward at this time but will be retained as a living document “bin” until the next CER is prepared. The bin will be used to document and retain potential Forest Plan needs for change that are raised internally or by the public.

Desired Conditions

Add Desired Conditions where they are missing:

- Describe sustainable species composition and distribution for PNVTs
- Provide desired conditions for new recreation uses such as ATV, rock climbing, geo-caching, paint balling, etc.
- Provide Desired Conditions for the Forest products program that addresses the cultural importance of a variety of Forest products, including maintenance and management of pinyon trees for pinyon nut gathering, ceremonial materials, and continued access to gather firewood.
- Fine scale land areas (land use zones) for identifying desired conditions and management to meet fine scale needs (i.e. narrow endemics).

Objectives

- Provide firewood for commercial and private uses.
- Provide for personal use wood products
- Provide material for tribal ceremonial and traditional uses
- Implement EMS
- Outfitter guide needs assessment
- Provide Motorized recreation opportunities
- Control invasive species
- Designate of Bill Williams as an administrative site
- Managing the range resource for both ungulates and domestic livestock.
- Strengthen working relationships with local governments

Guidelines

- Update existing Visual Quality Objectives (VQO) language and layers to the Scenery Management System (SMS) for the North Kaibab Ranger District.
- Endemic species and at-risk species(need corresponding DCs).
- Address management appropriate areas for new recreation uses such as ATV, rock climbing, geo-caching, and paint balling, etc).

Suitability of Areas

- Identify general suitability of uses other than timber harvest (e.g., grazing, mining, off road travel).
- Energy corridors and development (wind farms, solar, bio fuels)

Special Areas

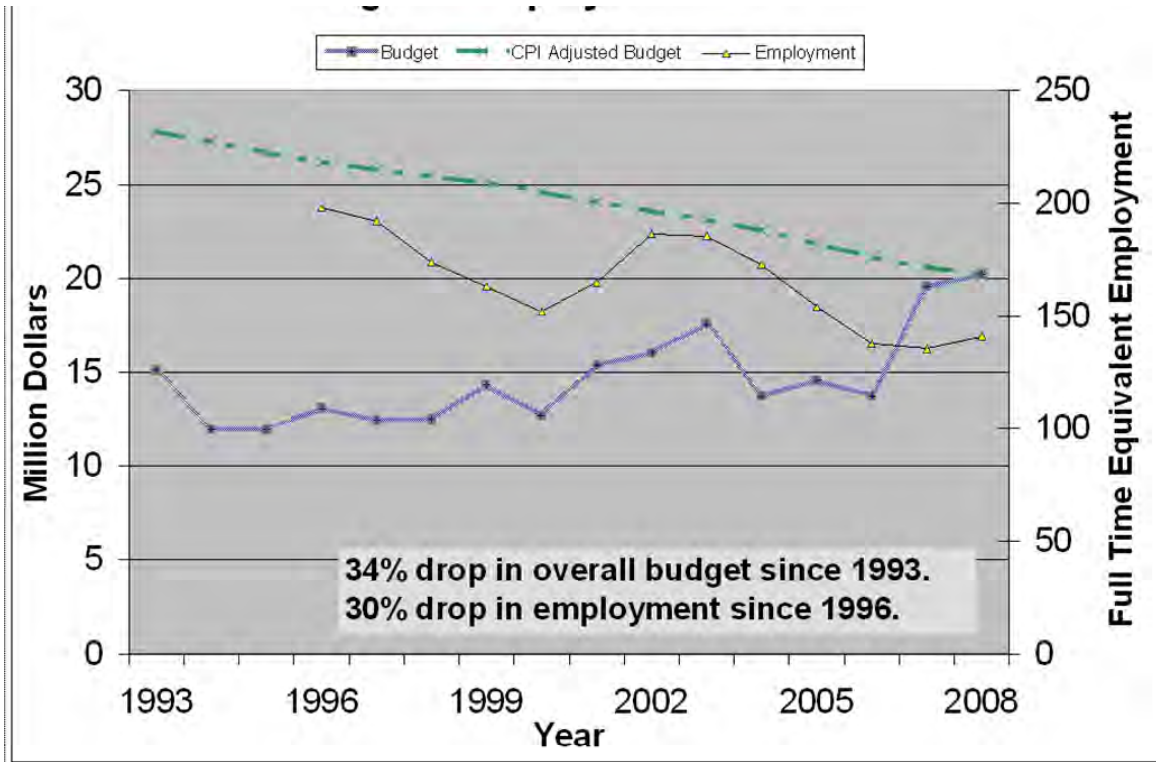
- Review and update proposed Garland Prairie. Consider the potential for other RNAs.

Monitoring

- Species monitoring has been employed on the KNF to a limited extent (e.g., bird surveys), but could be used more extensively and with greater influence in designing future projects.

Appendix 7. Declining Kaibab National Forest budget and employment over time.

Over the past 15 years, the Kaibab National Forest’s budget has remained relatively static. However, when adjusted for inflation, it has declined approximately 30 percent along with employment. This has resulted in overall decrease in capacity.



Appendix 8. Summary of Public Involvement and Collaboration (CER Phase 1)

Unless specifically noted, the meetings chronicled below were open to the public and provided opportunities for comment. In addition to formal meetings, the Kaibab NF website provides information about Forest Plan Revision, as well as opportunities to comment online.

Spring 2006 - The Southwestern Regional Office began the public involvement portion of the Forest Plan Revision process. Rollout meetings were held in Tucson, Phoenix, and Flagstaff.

Fall 2006 Public Meetings

- 1) Two sets of public meetings were held in various locations around each of the Forests during the fall of 2006 (for the Kaibab: Williams, Flagstaff, North Kaibab, and Tusayan; for the Coconino: Flagstaff, Winslow, Camp Verde, and Happy Jack). Joint Forest meetings were also held in Phoenix. The first set of meetings began with an overview of the plan revision process, followed by small group brainstorming sessions focused on likes/vision and dislikes/changes for the forest. The second set began with an overview of the plan revision process and explanation of the plan components.

2007 Public Meetings

- 1) Working Groups – Five sets of public meetings had originally been envisioned by the Forest Service. However, as the process developed, it became clear that it would be more efficient to target public participation in targeted working groups instead of holding broader public meetings. Working groups (individuals volunteered to participate) were developed for Species Diversity, Ecosystem Diversity, Social and Economic Sustainability, and Special Areas. The working groups met on different schedules and the number of meetings held was based on the complexity of the information to gather and review.

Agency Meetings 2006

- 1) In November 2006, the Coconino and Kaibab National Forests held a multi-agency Plan Revision Meeting. This was attended by the National Park Service, Arizona State Parks, Coconino County, Yavapai County, Fish and Wildlife Service, Arizona State Forestry, Arizona Game and Fish Department, City of Flagstaff, City of Sedona, and Babbitt Ranches. This meeting reviewed the public comment process to date and asked for information from each agency that would be helpful in the plan revision effort. The majority of participants asked to stay informed via agency briefings.
- 2) In January 2008, the Coconino and Kaibab National Forests held a multi-agency and public meeting to discuss how the forests would go forward in forest plan revision in a planning rule neutral manner. Public input was sought on the products to date, and how the forest should move into finalizing the first phase of revision.

Tribal Meetings 2002-2007

- 1) On August 1, 2002 the Forest Supervisor sent a letter to tribes including initial information on the Forest Plan Implementation analysis (pre-project analysis).
- 2) Early on in the planning process the Forest began including discussion of Forest Plan Revision in regularly scheduled government to government consultation meetings. Forest Plan Revision was discussed at government to government meetings with the Hopi Tribe/Hopi Cultural Resource Advisory Task Team in Kykotsmovi, AZ on 6/22/06 and the Kaibab Band of Paiute Indians in Pipe Springs, AZ on 7/6/06.
- 3) On 9/1/06 the Forest Supervisor sent a consultation letter for Forest Plan Revision to the Havasupai Tribe, the Hopi Tribe, the Hualapai Tribe, the Kaibab Band of Paiute Indians, the Pueblo of Zuni,

- and the Yavapai-Prescott Indian Tribe. The Forest received a response letter stating that the Pueblo of Zuni had no comments about the undertaking.
- 4) On 11/1/06 and 11/2/06 the Coconino National Forest hosted a meeting in Flagstaff, AZ to discuss the Forest Plan Revision process with area tribes. Representatives from the Kaibab and Coconino National Forests, the Pueblo of Acoma, the Hopi Tribe, the Hualapai Tribe, the Navajo Nation and the Yavapai-Prescott Indian Tribe attended the meeting.
 - 5) Following that meeting, the Forest began including discussions and updates about Plan Revision in regularly scheduled government to government consultation meetings with area tribes. Forest Plan Revision was discussed at government to government meetings with the Havasupai Tribe in Tusayan, AZ on 2/5/07 and by conference call on 7/11/07, the Hopi Tribe in Kykotsmovi, AZ on 12/20/06 and 2/21/07, the Navajo Nation in Window Rock, AZ on 1/31/07 and 5/30/07, and the Kaibab Band of Paiute Indians in Pipe Springs on 1/21/08. Kaibab National Forest staff also attended meetings of the Cameron, Bodaway/Gap, and Coppermine Canyon Chapters of the Western Navajo Agency to inform nearby Navajo communities about the Forest Plan Revision process (on 12/17/06, 2/15/07, and 3/11/07 respectively). On 12/18/06 a member of the Core Revision Team met with the Navajo Forestry Department in Fort Defiance, AZ to discuss the Forest Plan Revision.
 - 6) In April of 2007, the Forest scheduled a community meeting in Pipe Springs with the Kaibab Band of Paiute Indians. However, the 2005 Planning Rule was enjoined shortly before the meeting and the meeting was cancelled.
 - 7) On 8/8/07 the Kaibab National Forest hosted an Intertribal meeting in Williams, AZ. During the meeting, the Forest conducted a Forest Plan Revision workshop with tribal representatives. The workshop was attended by representatives of the Havasupai Tribe, the Hopi Tribe, the Hualapai Tribe, the Kaibab Band of Paiute Indians, the Navajo Nation, the Yavapai-Prescott Indian Tribe, the Yavapai-Apache Nation, and the Tonto Apache Tribe.
 - 8) The Kaibab National Forest held a series of workshops with area tribes to further develop comments and concerns regarding the Forest Plan. Forest representatives met with the Navajo Nation in Flagstaff, AZ on 2/14/08, the Yavapai-Prescott Indian Tribe in Williams, AZ on 2/19/08, the Hopi Tribe in Kykotsmovi, AZ on 2/20/08, the Hualapai Tribe in Peach Springs on 3/4/08, the Havasupai Tribe in Tusayan, AZ on 3/18/08, and the Kaibab Band of Paiute Indians in Pipe Springs on 3/19/08.
 - 9) On 09/03/08 the Kaibab National Forest hosted an Intertribal meeting in Williams, AZ. The Forest provided updates on the Forest Plan Revision process. The meeting was attended by representatives of the Hopi Tribe, the Hualapai Tribe, the Kaibab Band of Paiute Indians and the Navajo Nation.

Mike Lyndon, KNF Tribal Liaison, has also had regular phone conversations over the last three years with tribes as questions and issues come up. The details of these are not included in this summary.

A presentation and discussion on cultural sensitivity was conducted by Dexter Albert, Intrinsic Inc. for the Forest Service planning team and the leadership team. The session was meant to orient the team to some of the best practices for work with tribal communities.

Collaboration Among Forests

As noted in the public participation section, the Coconino and Kaibab NF held a number of public meetings together during the first phase of plan revision. In addition, Forest Planners from the Coconino, Kaibab and Prescott National Forests began meeting together on an as needed basis.

Other Information of Note

In March of 2007, the 2005 Planning Rule was enjoined. While the forest was able to work internally on specific products, public meetings were put on hold until direction was provided about how forests were to continue with forest planning. The Southwestern Region decided to move forward in a “rule-neutral” manner.