Land Management Plan for the Apache-Sitgreaves National Forests
Administrative Change #2
CHANGE PAGES
August 15, 2016

This Administrative Change to the 2015 Land Management Plan for the Apache-Sitgreaves National Forests was made to address issues raised during appeal negotiations and to correct errors and inaccuracies identified by Forest employees and partners.

These change pages may be used to replace the original pages in the printed documents. In all cases, pages with changes are paired with their overleaf pages to enable two-sided printing. An updated electronic version (PDF) of the Land Management Plan will be posted to the Forests' website at a later date. Pages which have been changed are identified in the page footers, and the date of the change (August 15, 2016) has been included.

Management Approaches for Aquatic Habitat and Species

Proactive management of aquatic habitats and populations is critical to reversing downward population trends in several federally listed species. Physical barriers or habitat alterations like temperature changes, loss of streamflow, nonnative species predation, and nonnative hybridization can be threats to these species. Habitat improvement projects are prioritized with an emphasis on federally listed species and other species with population or habitat concerns. Managers work to ensure native species can be found in their historic habitat.

The Apache-Sitgreaves NFs assist the Arizona Game and Fish Department (AZGFD) with efforts to protect and reintroduce native aquatic species where appropriate and control or eradicate nonnative species. The forests support efforts to develop effective methods to eradicate crayfish and other undesirable nonnative species. The Apache-Sitgreaves National Forests coordinate with and support the AZGFD in the use of aquatic habitat and species improvement methods in order to move aquatic resources toward desired conditions when such methods are consistent with applicable plan components.

Enhancement or restoration treatments may include stabilization of stream banks and road crossings, facilitation of aquatic species passage and movement, restoration of perennial flows and native vegetation, or removal of unneeded impoundments. Ephemeral and seasonal wetlands are managed to lengthen wet periods. Wetlands are protected from activities that reduce habitat quality or size such as dewatering or loss of emergent vegetation.

Related Plan Content for Aquatic Habitat and Species

See the following sections: Overall Ecosystem Health, Water Resources, Riparian Areas, Invasive Species, Livestock Grazing, and Water Uses.

All PNVTs

Background for All PNVTs

The 14 major PNVTs[12] can be assembled into 5 groupings: riparian, forest, woodland, grassland, and chaparral. This section pertains to all 5 groupings and all 14 PNVTs. Each PNVT consists of one or more subtypes depending on local environmental characteristics. These subtypes (e.g., pine-Gambel oak is a subtype of the ponderosa pine PNVT) are not described in detail in this plan but may be evaluated at the project or activity level.

Riparian PNVTs include wetland/cienegas and three riparian forested PNVTs: mixed broadleaf deciduous, montane willow, and cottonwood-willow. There are four forested PNVTs: ponderosa pine, dry mixed conifer, wet mixed conifer, and spruce-fir. Madrean pine-oak and piñon-juniper make up the woodland PNVTs. The three grassland PNVTs are Great Basin, semi-desert, and montane/subalpine. Interior chaparral is the only chaparral PNVT.

All of these PNVTs vary, to some degree, in structure, composition, function, and natural ecological processes from what they were historically. Fire and climate change are among the most important natural ecological disturbances that shaped these vegetation communities.

The variety of habitat conditions provides for a wide diversity of plant species. Preliminary estimates include over 2,500 species and varieties. Vegetation conditions for Mexican spotted owl (MSO) and other federally listed species, although not described in detail below, are managed consistent with the habitat requirements specified in the appropriate species recovery plan.

[12] This plan refers to PNVT, meaning the potential natural vegetation type. Refer to appendix B for more information.

Ranges of values presented in desired conditions reflect varying multiple use needs and/or the natural variation in the composition and structure within a PNVT due to soils, elevation, and aspect. The desired conditions do not necessarily represent reference conditions, since it may not be possible, nor desirable, to return to that condition. Additional information on desired conditions for overstory and understory vegetation can be found in appendix B.

Desired conditions are described at multiple scales when possible. **Fine scale** is a 10-acre or less area at which the distribution of individual trees (single, grouped, or aggregates of groups) is described. **Mid-scale** is a unit of 100 to 1,000 acres and is composed of assemblages of fine scale units which have similar biophysical conditions. **Landscape scale** is an assemblage of mid-scale units, typically composed of variable elevations, slopes, aspects, soils, plant associations, and ecological processes. An area at this scale comprises multiple mid-scale units, most often 10 or more.

Desired Conditions for All PNVTs

Landscape Scale Desired Conditions (10,000 acres or greater)

- Each PNVT contains a mosaic of vegetative conditions, densities, and structures. This mosaic occurs at a variety of scales across landscapes and watersheds. The distribution of physical and biological conditions is appropriate to the natural disturbance regimes affecting the area.
- The vegetative conditions and functions are resilient to the frequency, extent, and severity of disturbances (e.g., fire, insects and disease, flood, climate change, management activities). The landscape is a functioning ecosystem that contains all its components and processes.
- Natural processes and human and natural disturbances (e.g., wildland fire, mechanical vegetation treatments) provide desired overall tree density, structure, species composition, coarse woody debris, and nutrient cycling. Natural fire regimes are restored. Uncharacteristic fire behavior is minimal or absent on the landscape.
- Wildland fire maintains and enhances resources and, as nearly as possible, is allowed to function in its natural ecological role.
- Native plant communities dominate the landscape.
- Species genetic diversity remains within native vegetation and animal populations, thus enabling species to adapt to changing environmental and climatic conditions.
- Vegetative connectivity provides for species dispersal, genetic exchange, and daily and seasonal movements across multiple spatial scales.
- Vegetation characteristics (e.g., density, litter) provide favorable conditions for water flow and quality.
- Organic soil cover and herbaceous vegetation protect soil, facilitate moisture infiltration, and contribute to plant and animal diversity and ecosystem function.
- Diverse vegetation structure, species composition, densities, and seral states provide quality habitat for native and desirable nonnative plant and animal species throughout their life cycle and at multiple spatial scales. Landscapes provide for the full range of

forests develop partnerships with interested individuals and groups to help implement the wildlife program, including wildlife survey and habitat assessment. The forests also promote public education and valuing of the wildlife resource on the forests. The latter is increasingly important with growing urbanization and forest use.

Where the need is demonstrated, seasonal road restrictions and area closures may be used to provide refuge in small and large blocks of land habitat for a wide range of species.

Related Plan Content for Wildlife and Rare Plants

See the following sections: Overall Ecosystem Health, All PNVTs, Dispersed Recreation, Developed Recreation, Motorized Opportunities, Nonmotorized Opportunities, Livestock Grazing, Minerals and Geology, and Wildlife Quiet Areas.

Invasive Species

Background for Invasive Species

Nonnative plants (including diseases) and animals (including insects) that do, or have the potential to do, ecological or economic harm are classified as invasive species. Invasive species can be terrestrial or aquatic. On the Apache-Sitgreaves NFs, numerous invasive species pose risks to native species and ecosystem function and to the production of forest goods and services. Invasive plants, of which there are over 50 species, are currently (2008) found on at least 30,000 acres of the forests. For example, musk thistle and Siberian elm have spread along roadways, bull thistle has established in numerous meadows and wetlands, and tamarisk has become common along many streams and lakes. Crayfish, also common in many streams and lakes, are harming several native aquatic species.

Figure 7. Yellow toadflax, an invasive species on the Apache-Sitgreaves NFs
© Photo courtesy of Michael Shepherd, USDA Forest Service, Bugwood.org

Management of invasive species is an increasing need across all PNVTs on the Apache-Sitgreaves NFs. There is an array of tools (chemical, biological, mechanical, and cultural) to help managers control or eradicate these species. To address terrestrial invasive plants, managers have implemented an integrated forestwide noxious or invasive weed management program. Even though complete eradication of invasive species is not always possible, aggressive treatment of existing populations, along with prevention of new infestations or populations, is important to protect native ecosystem diversity.

Desired Conditions for Invasive Species

Landscape Scale Desired Condition (10,000 acres or greater)

- Invasive species (both plant and animal) are nonexistent or in low occurrence to avoid negative impacts to ecosystems.

Mid-Scale Desired Conditions (100 to 1,000 acres)

- Undesirable nonnative species are absent or present only to the extent that they do not adversely affect ecosystem composition, structure, or function, including native species populations or the natural fire regime.
- Introduction of additional invasive species rarely occurs and is detected at an early stage.

Objectives for Invasive Species

- Annually, contain, control, or eradicate invasive species (e.g., musk thistle, Dalmatian toadflax) on 500 to 3,500 acres.
- Annually, control or eradicate invasive species (e.g., tamarisk, bullfrogs) on at least 2 stream miles.

Standards for Invasive Species

- Projects and authorized activities shall be designed to reduce the potential for introduction of new species or spread of existing invasive or undesirable aquatic or terrestrial nonnative populations.

Guidelines for Invasive Species

- Projects and activities should not transfer water between drainages or between unconnected water bodies within the same drainage to avoid spreading disease and aquatic invasive species.
- Project areas should be monitored to ensure there is no introduction or spread of invasive species.
- Treatment of invasive species should be designed to effectively control or eliminate them; multiple treatments may be needed.
- Pesticide use should minimize impacts on nontarget plants and animals.

Management Approaches for Invasive Species

The forests use an integrated management approach with the goal of preventing, controlling, or eradicating invasive species. This involves prioritizing both species and areas for treatment, depending on risk, and identifying the most appropriate methods for control and eradication. Particular attention is needed for treatment of yellow starthistle, tamarisk, musk thistle, and bull

thistle. Species not yet extensive which provide good opportunity for treatment success include Dalmatian toadflax, Canada thistle, and bullfrogs. Treatment efforts are focused in roadways, developed recreation sites, trailheads, boating areas, and areas with mechanical treatments or concentrated use (e.g., corrals, driveways, log landings, dispersed campsites, pile burn sites). The control or eradication of crayfish and undesirable nonnative fish is needed to restore native aquatic species; however, more research is needed to determine effective tools for aquatic invasive species.

Forest employees identify, locate, and report invasive species occurrences. The forests maintain an inventory which identifies areas of invasive species occurrence. Because of the often aggressive and tenacious nature of invasive species, the forests apply timely initial treatments with follow-up treatments for as long as needed to meet either eradication or control goals.

The forests continue to provide education and outreach programs designed to increase employee, public, and permittee awareness. Implementation of preventative measures (e.g., pre- and post-work equipment sanitation, requiring certified weed-free seed and hay) continues through permitting, contracting, and other forest administrative processes. The forests continue to utilize vehicle wash stations to prevent spread of noxious weeds, nonnative invasive plants, insects, and disease pathogens.

Where determined appropriate, the forests collaborate with other agencies and entities in efforts to replace nonnative aquatic species with natives. The forests encourage ADOT to treat noxious weeds and undesirable nonnative invasive plants along highways. The forests cooperate with the Natural Resource Conservation Service (NRCS), APHIS, AZGFD, ADOT, Arizona Department of Agriculture (ADA), tribes, State and county extension services, local governments, and other organizations (e.g., Little Colorado River Weed Management Group) to support a successful invasive species management program. The Apache-Sitgreaves National Forests coordinate with and support the AZGFD in the use of methods that protect against aquatic invasives and diseases in order to move aquatic resources toward desired conditions, when such methods are consistent with applicable plan components.

Related Plan Content for Invasive Species

See the following sections: Overall Ecosystem Health, Aquatic Habitat and Species, All PNVTs, Wildlife and Rare Plants, Conservation Education, and Special Uses.

Landscape Scale Disturbance Events

Background for Landscape Scale Disturbance Events

Landscape scale (generally over 10,000 acres) disturbance events are recurring natural ecological processes with characteristic outcomes. However, given current (2011) departure from reference conditions, outcomes can be uncharacteristic where there are drastic changes in soil and vegetation components. These can lead to ecological succession away from desired conditions, which can be complicated by other factors like climate change and invasive species. When uncharacteristic outcomes occur, the landscape can take hundreds of years or more to recover to some level of stability. Where outcomes are uncharacteristic and there are needs to accelerate recovery, additional direction is provided to protect existing resources and facilitate recovery of soil and vegetation components and improve ecosystem health.

Desired Conditions for Landscape Scale Disturbance Events

Landscape Scale Desired Conditions (10,000 acres or greater)

- The Apache-Sitgreaves NFs landscapes retain the resiliency to survive landscape scale disturbance events.

Standards for Landscape Scale Disturbance Events

- Threats to human safety and property shall be promptly addressed following landscape scale disturbance and mitigated through measures such as signing, temporary closures, or treatment.

Guidelines for Landscape Scale Disturbance Events

- Erosion control mitigation features should be implemented to protect significant resource values and infrastructure such as stream channels, roads, structures, threatened and endangered species, and cultural resources.
- Felling of hazard trees (either dead or alive) should be limited to those which could hit a road, recreation site, building, or other infrastructure to protect places where humans, vehicles, or developments would most likely be present.
- Projects and activities (e.g., revegetation, mulching, lop and scatter) should be designed to stabilize soils and restore nutrient cycling, if needed, and establish movement toward the desired conditions for the affected PNVT(s).
- Where conifer seed sources are lost or poorly distributed and/or deciduous tree species are not adequately resprouting, artificial regeneration (e.g., planting, seeding) should be used to promote movement toward desired conditions, provided adequate site conditions exist.
- Management should emphasize long term reestablishment of native deciduous trees, shrubs, and herbaceous vegetation to maintain ecosystem diversity.
- An adequate number and size of snags and logs, appropriate for the affected PNVT, should be retained individually and in clumps to provide benefits for wildlife and coarse woody debris for soil and other resource benefits.
- Projects and activities should include both short and long term provisions for scenic integrity, especially in sensitive foreground areas (high and very high scenic integrity).

Management Approaches for Landscape Scale Disturbance Events

Managers consider the large scale event recovery guidance in Forest Service Manual 2030 when responding to these disturbance events. Hazard trees may be removed along roads to meet guidance in FSM 2330 (publicly managed recreation opportunities) and FSM 7700 (travel management). Where extensive tree mortality results from landscape scale disturbance and economic value exists, salvage of dead trees may be considered where this contributes to the movement toward desired conditions. Deferral of ecological restoration or salvage projects and activities may also be considered where these are not necessary for recovery.

Desired Conditions for Forest Products

- The Apache-Sitgreaves NFs provide a sustainable supply of forest products (e.g., small roundwood, sawlogs, biomass, firewood, cones, Christmas trees, wildlings) to businesses and individuals within the capability of the land.
- The collection of live plants, mushrooms, and other forest products does not impact species persistence onsite.

Objectives for Forest Products

- Annually, prepare and offer up to an average of 122,000 CCF[29] from suitable timberlands resulting from sustainable harvest to provide wood products to businesses and individuals.
- Annually, provide up to 94,000 CCF (119,380 cords[30]) of firewood for personal and commercial use.
- Annually, provide an average of 5,000 permits for Christmas trees.

Standards for Forest Products

- Authorizations to cut, collect, or use forest products for any personal, commercial, or scientific purpose (i.e., permits, contracts, agreements) shall include provisions to ensure the needs of wildlife, which depend upon those forest products, will continue to be met (e.g., fungi and cone collection with respect to overwinter forage needs of squirrels).

Guidelines for Forest Products

- Permits issued for forest products should include stipulations to protect resources.

Management Approaches for Forest Products

Wood products are a secondary benefit of treatments that are intended to restore the forests' ecological composition, structure, and function to a healthier, resilient condition. Timber production and tree cutting are used to help achieve vegetation desired conditions, as well as contribute to the local and regional economy. Uneven-aged silvicultural systems are emphasized and even-aged systems are used where appropriate. Tree cutting on lands not suitable for timber production may occur for such purposes as restoration, salvage, fuels management, insect and disease mitigation, protection or enhancement of biological diversity or wildlife habitat, research or administrative studies, or recreation consistent with other management direction.

A variety of partnerships and authorities are used for making forest products available to forest users (e.g., procurement contracts, stewardship contracts, forest products permits). The forests also use the Tribal Forest Protection Act to collaboratively work with adjacent tribal governments

[29] CCF = 100 cubic feet

[30] 1 CCF = 1.27 cords

to carry out restoration projects. Tribes culturally affiliated with lands on the Apache-Sitgreaves NFs may gather trees, portions of trees, or forest products free of charge for noncommercial traditional and cultural purposes.

The forests allowable sale quantity (ASQ) is estimated as an annual average of 122,000 CCF. The ASQ represents the amount of timber (not including firewood or nonindustrial wood) that may be sold from lands suitable for timber production. Wood from nonsuitable timberlands would also be available.

Figure 1. Small diameter trees to be used for forest products

Other desired forest products, such as house logs, are available through permits or small sales. Areas may be identified for forest product removal (e.g., Christmas tree, firewood). Woody biomass not removed by project operations may be made available to meet public or industry needs. Plan direction and interdisciplinary input are used to develop additional project specific and/or resource specific conditions to be included in all forest product permits and contracts issued.

Related Plan Content for Forest Products

See the following sections: Overall Ecosystem Health, All PNVTs, Forests: All Forested PNVTs, Woodlands: All Woodland PNVTs, Wildlife and Rare Plants, American Indian Rights and Interests, Landscape Scale Disturbance Events, and Special Uses.

Livestock Grazing

Background for Livestock Grazing

As of 2014, the Apache-Sitgreaves NFs administer 92 active grazing allotments and two designated sheep driveways. Livestock grazing contributes to the livelihood of the permittees and to the economy of local communities and counties. Livestock numbers have declined over the last 20 years, as the forests have balanced permitted numbers with the capacity of the land while responding to environmental changes such as drought. Over the last decade, the forests have worked with partners and permittees to reduce grazing pressure on sensitive areas (e.g., critical areas, riparian areas).

Desired Conditions for Livestock Grazing

- Livestock grazing contributes to the social, economic, and cultural diversity and stability of rural communities.
- Livestock grazing and associated activities occur such that healthy, diverse plant communities, satisfactory condition soils, and wildlife habitat are maintained or improved.
- Range developments for livestock minimize impacts to wildlife and blend with the natural environment.

within the planning area. FMPs and their associated programs and activities support the implementation of land management plans. FMPs are designed to adapt to changing conditions.

The Apache-Sitgreaves NFs' FMP provides for firefighter and public safety first; includes fire management strategies, tactics, and alternatives; and addresses values to be protected and public health issues. The FMP helps guide fire managers in wildland fire decisionmaking.

When appropriate weather and fuel moisture conditions exist, use of wildland fire is a cost-effective way to reduce the likelihood of uncharacteristic fire. The risk of uncharacteristic fire can be reduced when fires occur within historic fire regimes.

To achieve ecosystems that are resilient to fire disturbance, vegetation structure needs to be more consistent with desired conditions. In addition to fire treatments, activities such as thinning and tree harvesting are needed to reduce tree density and canopy cover and support the natural fire regime. Strategic placement and design of these treatments is key to minimizing the impact from fire on values to be protected more efficiently because these activities are costly and there is limited capacity to implement them.

Desired Conditions for Wildland Fire Management

- Human life, property, and natural and cultural resource are protected within and adjacent to NFS lands.
- Wildland fires burn within the range of frequency and intensity of natural fire regimes. Uncharacteristic high severity fires rarely occur and do not burn at the landscape scale.
- Wildland fire maintains and enhances resources and functions in its natural ecological role.
- For all PNVTs, the composition, cover, structure, and mosaic of vegetative conditions reduce uncharacteristic wildfire hazard to local communities and forest ecosystems.

Guidelines for Wildland Fire Management

- Wildland fire may be used to meet PNVT desired conditions and enable natural fire regimes.
- Human-induced impacts (e.g., smoke production, suppression actions) to natural processes, resources, or infrastructure attributable to wildland fire activities should be managed towards achieving objectives as identified in the applicable decision document.
- Resources and infrastructure (e.g., fences, roads, stock tanks) that are lost or damaged by prescribed fire, use of wildland fire, or any suppression activities should be stabilized and rehabilitated.
- Firelines, helispots, and fire camps should be located to avoid disturbance to critical species and impacts to cultural resources.

- Aerial retardant drops should avoid threatened, endangered, proposed, or candidate, identified sensitive species, and waterways[32] .

Management Approaches for Wildland Fire Management

Wildland fire objectives are based on factors such as movement of PNVTs toward desired conditions, fuel conditions, current and expected weather and fire behavior, topography, resource availability, and values to be protected. Social and economic considerations (e.g., smoke) may also affect objectives, as well as adjoining jurisdictions having similar or differing missions and directives.

Wildfires may be concurrently managed for one or more objectives (e.g., protection, resource enhancement) that can change as the fire spreads across the landscape. Strategies chosen for wildfires include interdisciplinary input to assess site-specific values to be protected. These strategies are used to develop incident objectives and courses of action to enhance or protect those values. Managers use a decision support process[33] to guide and document wildfire management decisions that provide for firefighter and public safety, minimize costs and resource damage, and are consistent with values to be protected and management objectives. For prescribed fires, the decision document is the signed NEPA decision. To meet the plan's treatment objectives using prescribed fires, site-specific burn plans are developed which guide implementation. All prescribed fires are conducted in accordance with the Arizona Smoke Management Plan, administered by ADEQ, to comply with the Clean Air Act.

Wildland fire is one tool in the process of restoring the forests' fire-adapted ecosystems; in areas departed from desired conditions, the use of fire is often most effective when combined with mechanical treatments that further restore forest structure[34] . Mechanical treatments are costly, so the capacity to implement such treatments across the landscape is limited. Strategic placement and design of mechanical treatments increases their effectiveness in protecting values to be protected.

Wildland fire may be the only viable tool in areas such as steep rugged terrain or remote areas where mechanical treatments are not feasible. Objectives in these areas may include higher fire intensities and higher levels of mortality to achieve vegetation structural changes that would not occur through other means to move toward desired conditions. Fuels specialists and silviculturists, along with other resource specialists, work to ensure land management objectives are met. Joint silviculture prescriptions and burn plans may be produced.

Management of wildland fire is coordinated across jurisdictional boundaries whenever there is potential for managing a wildfire or a prescribed fire on more than one jurisdiction (e.g., other national forests, tribal lands, State lands). This is done with the understanding that fire-adapted ecosystems transcend jurisdictional boundaries.

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[32] See the Nationwide Aerial Application of Fire Retardant on National Forest System Land. Final Environmental Impact Statement. USDA Forest Service for species-specific information including which individual sensitive species are identified.

[33] The decision support system currently being used is the Wildland Fire Decision Support System.

[34] See Standard Management Practices for Site-Specific Project Planning and Implementation table in appendix B for how prescribed fire can be integrated with other silvicultural treatments at the project level.

- To limit impacts to undisturbed areas, new utilities (e.g., power lines, telephone lines, gas lines) should be colocated within existing corridors whenever technically feasible, within existing rights-of-way (including road rights-of-way), or follow major transportation routes.
- Within and adjacent to energy corridors, vegetation should be managed similarly to the Community-Forest Intermix Management Area so that facilities stay operational and reduce the hazards of human-caused damage, damage from wildland fire, and falling trees.
- Clearing of vegetation along rights-of-way, facilities, and permitted sites should be limited to that which achieves desired conditions, abates an identified hazard to the facility, or for operational efficiency and weed control.
- Trees and shrubs in riparian areas should only be removed when there is an imminent threat to facilities and, in these cases, trees should be left for large coarse woody debris recruitment into the stream and riparian system.
- When planning and implementing vegetation treatments (e.g., corridor maintenance), vegetation within riparian zones that provides rooting strength important for bank stability should be encouraged.
- As utility facilities are maintained or replaced, relocation of corridors outside of riparian areas should be considered to reduce potential impacts to these ecologically sensitive areas.
- Invasive plant species should be aggressively controlled within energy corridors to prevent or minimize spread.

Management Approaches for Energy Corridor

Existing energy corridors are managed according to approved management plans. Energy utility companies also comply with maintenance standards enforced by the North American Electric Reliability Corporation. Energy corridors are generally not managed to provide recreation opportunities. They are managed for very low scenic integrity where vegetation and structural changes may attract attention and dominate the landscape when viewed from nearby.

Forest managers work toward establishing voluntary agreements with permit holders to reduce the effects of forest conditions and activities on the facilities. Future applicants are not precluded from proposing a project outside a designated energy corridor, though consideration and approval of such a request may require a plan amendment. Applicants would also need approval from the Arizona Corporation Commission.

Related Plan Content for Energy Corridor

See the following sections: Scenic Resources, Lands, Special Uses, National Recreation Trails, and Eligible and Suitable Wild and Scenic Rivers.

Wild Horse Territory

Background for Wild Horse Territory

This management area contains most of the Heber Wild Horse Territory, approximately 19,700 acres[1] on the Black Mesa Ranger District. The territory was established in 1973 pursuant to the Wild Free-Roaming Horse and Burro Act of 1971 as amended with the purpose of providing use by and for the protection of wild horses. The Heber Wild Horse Territory is considered a special area by the Forest Service. The Forest Service entered into a Stipulation Agreement filed on March 2, 2007, agreeing that wild horses are by law an integral part and component of the natural system of the public lands, as expressed by Congress. Under the Stipulation Agreement, the Forest Service agreed to "refrain from any gathering or removing of horses within the Heber Wild Horse Territory, as well as, on the Black Mesa and Lakeside Ranger Districts (which are considered the Sitgreaves National Forest) until the Forest Service completes, with public involvement, an analysis and appropriate environmental document pursuant to NEPA and develops a written Heber Wild Horse Territory Management Strategy."

Desired Conditions for Wild Horse Territory

- Grazing is in balance with available forage (i.e., grazing and browsing by authorized livestock, wild horses, and wildlife do not exceed established use levels).
- Horse numbers within the territory are aligned with the appropriate management level[2] as described in the "Heber Wild Horse Territory Management Plan."
- The Wild Horse Territory Management Area contains landscapes that vary from moderately altered where human activities are evident (low scenic integrity) to natural appearing where human activities do not stand out (high scenic integrity).
- Recreation opportunities range from semiprimitive nonmotorized to roaded natural.

Guidelines for Wild Horse Territory

- When wild horse populations exceed the appropriate management level, horses should be removed in accordance with the "Heber Wild Horse Territory Management Plan" (when completed).

Management Approaches for Wild Horse Territory

The Forest Service will administer wild horses in the Heber Wild Horse Territory in accordance with applicable laws and regulations, including but not limited to 36 CFR Part 222, Subpart D. The Forest Service will work with the public to develop a Heber Wild Horse Territory Management Plan to direct specific management actions for the Heber Wild Horse Territory. Based on site-specific analysis, the management plan will determine an appropriate management

[1] Approximately 939 acres of the Heber Wild Horse Territory overlap the adjacent Community-Forest Intermix Management Area.

[2] The Interior Board of Land Appeals (IBLA) has defined the appropriate management level as the "optimum" number of wild horses (or burros) which results in a thriving natural ecological balance and avoids a deterioration of the range. (109 IBLA 119; also reference Dahl vs. Clark, supra at 592). It is usually expressed as a range of numbers. From http://www.blm.gov/nv/st/en/prog/wh_b/appropriate_management.html

level. As directed in the regulations at 36 CFR 222. 61(a)(1), the goal is to maintain a thriving ecological balance within the territory. Management actions may be needed both inside and outside of the territory to meet desired conditions.

Related Plan Content for Wild Horse Territory

See the following sections: Soils, All PNVTs, Riparian Areas, Forests: Ponderosa Pine, Forests: Dry Mixed Conifer, Wildlife and Rare Plants, Invasive Species, Developed Recreation, Livestock Grazing, and Community-Forest Intermix.

Wildlife Quiet Area

Background for Wildlife Quiet Area

Wildlife quiet areas (WQAs) were first identified in the 1980s by the Apache-Sitgreaves NFs in cooperation with the AZGFD to provide relatively undisturbed habitat where big game and other wildlife could reside without disturbance from motorized vehicle use. Other reasons they were set aside include the need to address road-related erosion, provide for more effective use of the habitat, and provide the nonmotorized hunter a high quality hunt opportunity without motorized impacts. These areas are recognized as key wildlife habitats. WQAs may also provide relatively undisturbed habitat and wildlife populations for research purposes.

Desired Conditions for Wildlife Quiet Area

- WQAs provide blocks of core habitat to meet wildlife life stage requirements during the breeding, rearing, and, in some cases, the critical wintering period.
- WQAs contribute to preserving natural behaviors and processes that sustain wildlife populations associated with each WQA (see below).
- WQAs provide for wide ranging predators and big game species, are large enough for a range of species, and provide for population and genetic exchange.
- WQAs lack disturbance from motorized vehicles, resulting in less stress to wildlife.
- WQAs provide undisturbed, nonmotorized hunting opportunities.
- WQAs provide semiprimitive nonmotorized recreation opportunities, including relatively quiet recreation opportunities close to or adjacent to intensively used areas.
- Landscapes in WQAs vary from slightly altered where human activities may be seen but do not attract attention (moderate scenic integrity) to natural appearing where human activities do not stand out (high scenic integrity).
- Willow Springs Horse Trap and Beaver-Turkey Ridge WQAs provide quiet areas for big game amid the intensive recreation uses on the Black Mesa Ranger District.
- Bear Springs and Cottonwood Seep WQAs provide quality travel, hiding, and thermal cover along the Mogollon Rim (Black Mesa and Lakeside Ranger Districts) for a wide variety of species ranging from turkeys to mountain lions. The WQAs provide an abundance of browse species important for deer and elk.

- Woolhouse WQA on the Lakeside Ranger District provides high quality winter range for pronghorn antelope and elk within a busy and heavily used wildland-urban interface.
- The Hulsey Bench WQA on the Alpine Ranger District provides Mexican spotted owl, northern goshawk, elk, deer, turkey, and bear refuge habitat.
- The Open Draw WQA on the Alpine Ranger District provides high quality foraging and young rearing habitat for deer, elk, turkey, and bear.
- Middle Mountain WQA provides refuge for northern goshawk, turkey, deer, elk, and Mexican spotted owl amid extensive dispersed recreation on the Alpine Ranger District.
- Upper Coyote Creek WQA on the Alpine Ranger District provides high quality habitat, especially undisturbed young rearing habitat, for deer, elk, turkey, and bear.
- St. Peters Dome WQA on the Springerville Ranger District provides high quality spruce-fir habitat for dusky grouse, bear, and other high elevation species.

Guidelines for Wildlife Quiet Area

- All WQAs should be managed to preclude snowmobile use to minimize disturbance during the critical winter period.
- WQA boundaries should be signed to identify the areas and educate the public about their purpose.
- Fences surrounding and within WQAs should be inspected and improved to allow wildlife movement within and outside of the areas. Fences should be removed if no longer needed.
- Hiding cover and travel ways for wildlife should be maintained to provide for security and connectivity of habitat.
- Restoration treatments should consider the needs of wildlife (e.g., calving/fawning areas, wallows, game crossings) to minimize potential impacts to the species and their habitat.

Management Approaches for Wildlife Quiet Area

WQAs are similar to the General Forest Management Area, but they are managed for nonmotorized access (except when otherwise authorized). There is an emphasis on improving wildlife habitat and maintaining existing wildlife developments. Management of habitat within WQAs may provide a benchmark for assessing effects of activities on generally undisturbed wildlife populations. The road in the Open Draw WQA is managed as open on a seasonal basis.

Related Plan Content for Wildlife Quiet Area

See the following sections: Overall Ecosystem Health, Wildlife and Rare Plants, Scenic Resources, National Recreation Trails, and Eligible and Suitable Wild and Scenic Rivers.

Chapter 4. Suitability

Introduction to Suitability

The Apache-Sitgreaves NFs are suitable, or appropriate, for a variety of uses. The broad use categories on the following pages are not intended to be all inclusive. Other uses, projects, or activities may be proposed during the life of the plan. Acquired lands are evaluated for suitability (chapter 4) prior to being allocated to appropriate uses.

An identification of an area as suitable for a particular use does not mean that the use will occur over the entire area. Likewise, identifying that a particular use is not suitable in a management area does not mean that the use will not occur in specific areas. The identification of an area as suitable for various uses is guidance for project and activity decision-making and is not a resource commitment or final decision approving projects and activities. Final decisions on resource commitments are made at the project level. The final decision to authorize livestock grazing would be made at a project (allotment) level.

Forestwide suitability calculations (acres suitable versus not suitable) can be found in appendix B of the Apache-Sitgreaves NFs "Programmatic Environmental Impact Statement for the Land Management Plan" (Forest Service, 2012a). Specifics about suitability of areas are analyzed at the project or activity level and are subject to laws, regulations, and plan guidance. Areas that are not suitable are those where a use is not compatible with desired conditions. However, this does not mean that the use cannot occur. Conversely, areas identified as suitable, when analyzed at the project or activity level, may not be able to support that use[1].

The suitability determinations (plan decisions) are summarized below and displayed in tables 6 through 11. The information outside of these tables is not a plan decision but is provided for background. Plan decisions and other content for forestwide direction (chapter 2) and management areas (chapter 3) should also be consulted.

Livestock Grazing Suitability

Livestock grazing is defined as foraging by permitted livestock, including cattle, horses, and sheep. Provisions of the 1982 Planning Rule require that the capability and suitability for producing forage for grazing animals on National Forest System (NFS) lands be determined.

Capability is the potential of an area of land to produce resources and supply goods and services. Capability depends upon current conditions and site conditions such as climate variability, slope, landform, soils, and geology. Capability was determined in the 1980s during the first round of forest planning by compiling data from the most recent individual grazing allotment analyses. Landscape scale conditions have not changed significantly since this evaluation.

Suitability is the appropriateness of applying certain resource management practices to a particular area of land, in consideration of relevant social, economic, and ecological factors. Suitable rangeland is determined based on compatibility with desired conditions and objectives in the plan area. Lands within the plan area are not identified as suitable for a certain use if that use is prohibited by law, regulation, or policy; would result in substantial and permanent impairment of the productivity of the land or renewable resources; or if the use is incompatible with the desired conditions for the relevant portion of the plan area. A unit of land may be suitable for a variety of individual or combined management practices. Table 6 identifies areas as suitable or not suitable for livestock grazing.

[1] As a result of site-specific analysis if plan suitability needs adjustment, it can be accomplished through a plan amendment.

Table 6. Suitability of livestock grazing on the Apache-Sitgreaves NFs

Management Area	Livestock Grazing Suitable	Livestock Grazing Not Suitable[a]
General Forest	X	
Community-Forest Intermix	X	
High Use Developed Recreation Area	X	
Energy Corridor	X	
Wild Horse Territory	X	
Wildlife Quiet Area	X	
Natural Landscape	X	
Recommended Research Natural Area		X
Research Natural Area		X
Primitive Area	X	
Recommended Wilderness	X	
Wilderness	X	
Other Areas		
Active and vacant grazing allotments	X	
Current National Forest System land not in a grazing allotment		X

[a] Areas that are not suitable for livestock grazing may occur within allotment boundaries but do not contribute to the overall grazing capacity of the allotment.

Special Uses Suitability

Table 7 identifies select special use categories that are suitable or not suitable on certain areas of the Apache-Sitgreaves NFs. Energy corridors are linear strips of land identified for the present or future location of a utility right-of-way (e.g., above or below-ground electric transmission line, gas pipeline). Other energy developments include the infrastructure associated with the provision or transport of energy (e.g., dam, biomass power generation, wind turbines, solar panels). Communications sites are National Forest System lands used for telecommunications services as identified in appendix C.

Table 7. Suitability of select special uses on the Apache-Sitgreaves NFs

Management Area	Energy Corridor Suitable	Energy Corridor Not Suitable	Other Energy Development Suitable	Other Energy Development Not Suitable	Communications Site Suitable	Communications Site Not Suitable
General Forest	X		X		X	
Community-Forest Intermix	X		X		X	
High Use Developed Recreation Area		X		X	X	

Feral animal – **". . .** animals, including horses, burros, cattle, swine, sheep, goats, reindeer, dogs, and cats, without ownership~~,~~ that have reverted to the wild from a domestic state . . ." (50 CFR 30.11). Feral horses and burros are animals that do not meet the definition of a wild free-roaming horse in accordance with 36 CFR 222.60(b)(13).

Fire intensity – The product of the available heat of combustion per unit of ground and the rate of spread of the fire, interpreted as the heat released per unit of time for each unit length of fire edge. The primary unit is British thermal unit per second per foot (Btu/sec/ft.) of fire front. See also fire severity.

Fire regime – The patterns, frequency, and severity of fire that occur over a long period of time across a landscape and its immediate effects on the ecosystem in which it occurs. There are five fire regimes which are classified based on frequency (average number of years between fires) and severity (amount of replacement of the dominant overstory vegetation) of the fire.

- **Fire regime I** – 0 to 35-year frequency and low (surface fires most common) to mixed severity (less than 75 percent of dominant overstory vegetation replaced)
- **Fire regime II** – 0 to 35-year frequency and high (stand replacement) severity (greater than 75 percent of the dominant overstory vegetation replaced)
- **Fire regime III** – 35 to 100+ year frequency and mixed severity (less than 75 percent of the dominant overstory vegetation replaced)
- **Fire regime IV** – 35 to 100+ year frequency and high (stand replacement) severity (greater than 75 percent of the dominant overstory vegetation replaced)
- **Fire regime V** – 200+ year frequency and high (stand replacement) severity.

Fire risk – The chance of fire starting, as determined by the presence and activity of causative agents.

Fire severity – Degree to which a site has been altered or disrupted by fire; also used to describe the product of fire intensity and residence time; usually defined by the degree of soil heating or mortality of vegetation.

Fireline – The part of a containment or control line that is scraped or dug to mineral soil.

Fire management plan – A plan that identifies and integrates all wildland fire management and related activities within the context of approved land management plans. It defines a program to manage wildland fires (wildfire and prescribed fire).

Free-flowing – Existing or flowing in natural conditions without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway.

Fugitive dust – Fine particulate matter from windblown soil and dust which becomes airborne.

Firewood – Wood grown or used for fuel.

Functioning ecosystem – An ecosystem that contains all components and processes necessary to maintain resilience over time.

Genetic exchange – The exchange of genetic material between individuals and/or populations through sexual reproduction.

Genotype – The genetic makeup of an organism or group of organisms.

Geomorphic – Refers to the process of erosion and sediment transport and deposition.

Goshawk foraging areas – Areas that surround goshawk PFAs (post-fledging family areas) that northern goshawks use to hunt for prey. They are approximately 5,400 acres in size (not including the PFA or nesting area acres).

Goshawk nest areas – Areas immediately around a nest that are used by northern goshawks in relation to courtship and breeding activities. They are approximately 30 acres in size and contain multiple groups or patches of large, old trees with interlocking crowns.

Goshawk post-fledging family areas (PFAs) – Areas that surround nest areas. They represent an area of concentrated use by the northern goshawk family until the time the young are no longer dependent on adults for food. PFAs are approximately 420 acres in size (not including the nest area acres).

Groundwater-dependent ecosystems – Communities of plants, animals, and other organisms whose extent and life processes are dependent on access to or discharge of groundwater. (USDA FS 2012c).

Group – A cluster of two or more trees with interlocking or nearly interlocking crowns at maturity surrounded by an opening. Size of tree groups is typically variable depending on forested PNVT and site conditions and can range from fractions of an acre (a two-tree group) (i.e., ponderosa pine, dry mixed conifer) to many acres (i.e., wet mixed conifer, spruce-fir). Trees within groups are typically non-uniformly spaced, some of which may be tightly clumped.

Group selection – An uneven-aged management method in which trees are removed and new age classes are established in groups, adjacent to other groups of different age classes. Group cut size is determined by the reproduction requirements of the species desired and by the number or total acreage of different age classes desired across the stand.

Habitat – The physical location or type of environment in which an organism or biological population lives or occurs.

Half-shrub – Half-shrubs have a woody base and lower stems but the top growth remains herbaceous during the growing season.

Herbaceous – Grass, grass-like, and/or forb vegetation.

Herbivory – Loss of vegetation due to consumption by another organism.

Highly interactive species – A species that has a disproportionate effect on its ecosystem. The virtual or effective absence of a highly interactive species leads to significant changes in some feature of its ecosystem. Such changes include structural or compositional modifications, alterations in the import or export of nutrients, loss of resilience to disturbance, and decreases in native species diversity. The type of interactions these species have with their surrounding environment is critical to the persistence of certain ecosystem features through time. Examples of

restrictions to prevent disturbance to owls during the breeding season (March 1 through August 31).

Mosaic – Mix of recurring patterns of forested and non-forested areas at the identified scale (e.g., landscape, watershed, mid-scale). Patterns are variable and may change over time.

Motorized travel – Movement using machines that use a motor, engine, or other nonliving power sources other than a vehicle operated on rails or a wheelchair or mobility device , including one that is battery powered, designed solely for the use by a mobility-impaired person for locomotion and that is suitable for use in an indoor pedestrian area.

Motor vehicle use map (MVUM) – The MVUM displays designated roads, trails, and areas on an administrative unit or a ranger district of the National Forest System.

National Forest System (NFS) – As defined in the Forest and Rangeland Renewable Resources Planning Act of 1974 (Public Law 93-378), the "National Forest System" includes all national forest lands reserved or withdrawn from the public domain of the United States, all national forest lands acquired through purchase, exchange, donation, or other means; the national grasslands and land use projects administered under Title III of the Bankhead-Jones Farm Tenant Act (50 Stat. 525, 7 USC 1010-1012); and other lands, waters, or interests therein administered by the Forest Service or are designated for administration through the Forest Service as part of the system.

National Forest System road – A road wholly or partly within or adjacent to and serving the National Forest System that the Forest Service determines is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources. A forest road other than a road which has been authorized by a legally documented right-of-way held by a state, county, or other local public road authority (36 CFR § 212.1).

National Forest System trail – A trail wholly or partly within or adjacent to and serving the National Forest System that the Forest Service determines is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources. A forest trail other than a trail which has been authorized by a legally documented right-of-way held by a state, county, or other local public road authority (36 CFR § 212.1).

Native species – A species which is a part of the original fauna or flora in the area in question.

Natural disturbance regime – The historic patterns (frequency and extent) of fire, insects, wind, landslides, floods, and other natural processes in an area.

Natural fire regime – The fire regime that existed prior to human facilitated interruption of frequency, extent, or severity.

Naturalized – A species or subspecies that is not native to an area, but one which has adapted to that area and has a stable or expanding population. In some cases, species move into a new area by themselves, but in most instances they are human-associated introductions.

Natural potential condition – (pertaining to watershed conditions) Conditions that are referred to as pristine and show little or no influence from human actions. Watersheds that are properly functioning have terrestrial, riparian, and aquatic ecosystems that capture, store, and release water, sediment, wood, and nutrients within their range of natural variability for these processes. When watersheds are functioning properly, they create and sustain functional terrestrial, riparian, aquatic, and wetland habitats that are capable of supporting diverse populations of native aquatic- and riparian-dependent species (Forest Service, 2011).

Nonindustrial wood – Includes aspen, junipers, piñon pines, Chihuahuan pine, oaks, and any industrial species cut from non-suitable timberlands. Wood cut as nonindustrial may be used as firewood and/or biomass. Sometimes referred to as non-ASQ species.

Nonmotorized travel – Movement not relying on machines that use a motor, engine, or other nonliving power source (e.g., walking, canoeing, horseback riding).

Nonpoint source pollution (NPS) – NPS refers to water pollution affecting water quality from diffuse sources, such as polluted runoff from agricultural areas draining into lakes, wetlands, rivers, and streams. NPS can be contrasted with point source pollution, where discharges occur to a body of water at a single location, such as discharges from a chemical factory or urban runoff from a roadway or storm drain. NPS may derive from many different sources with no specific solution to rectify the problem, making it difficult to regulate.

Noxious weed – Any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry, or other interests of agriculture, irrigation, navigation, the natural resources of the United States, the public health, or the environment. The term typically describes species of plants that have been determined to be undesirable or injurious in some capacity. Federal noxious weeds are regulated by USDA-Animal and Plant Health Inspection Service under the Plant Protection Act of 2000, which superseded the Federal Noxious Weed Act of 1974. When the species are native, they are not considered invasive species by the Federal Government.

Old growth – In southwestern forested ecosystems, old growth is different than the traditional definition based on northwestern infrequent fire forests. Due to large differences among Southwest forested PNVTs and natural disturbances, old growth forests vary extensively in tree size, age classes, presence, and abundance of structural elements, stability, and presence of understory (Helms, ed., 1998). Old growth refers to specific habitat components that occur in forests and woodlands—old trees, dead trees (snags), downed wood (coarse woody debris), and structure diversity (Franklin and Spies, 1991; Helms, ed., 1998; Kaufmann et al., 2007). These important habitat features may occur in small areas, with only a few components, or over larger areas as stands or forests where old growth is concentrated (Kaufmann et al., 2007). In the Southwest, old growth is considered "transitional" (Oliver and Larson, 1996), given that that the location of old growth shifts on the landscape over time as a result of succession and disturbance (tree growth and mortality). Some species, notably certain plants, require "old forest" communities that may or may not have old growth components but have escaped significant disturbance for lengths of time necessary to provide the suitable stability and environment. See appendix B for a more detailed description.

Old growth components – Include old trees, dead trees (snags), downed wood (coarse woody debris), and structural diversity.

Soil and water conservation practices – Set of practices, which when applied during implementation of a project, protects soil and water quality to the level required by beneficial uses. These lead to the formation of site-specific BMPs during project planning.

Soil condition rating – A qualitative rating developed within the Southwestern Region of the Forest Service that provides an overall picture of soil condition vital in sustaining ecosystems. It is based on three soil functions: the ability of soil to resist erosion, infiltrate water, and recycle nutrients. There are four soil condition ratings:

- **Satisfactory** – soil function is being sustained and soil is functioning properly and normally.
- **Impaired** – the ability of the soil to function properly and normally has been reduced or there exists an increased vulnerability to degradation.
- **Unsatisfactory** – degradation of vital soil functions result in the inability of the soil to maintain resource values, sustain outputs, or recover from impacts.
- **Inherently unstable** – these soils are eroding faster than they are renewing themselves.

Soil productivity – The inherent capacity of the soil to support appropriate site-specific biological resource management objectives, which includes the growth of specified plants, plant communities, or a sequence of plant communities to support multiple land uses.

Special use authorization – A permit, term permit, temporary permit, lease, easement, or other written instrument that grants rights or privileges of occupancy and use subject to specified terms and conditions on National Forest System land.

Species diversity – Abundance of different species (both plant and animal) on the Apache-Sitgreaves NFs and adjoining lands; species richness. NFMA requires that land management plans provide for diversity of plant and animal communities.

Springs and seeps - Springs and seeps are groundwater-dependent ecosystems where groundwater discharges at the ground surface, often through complex subsurface flow paths (Stevens and Meretsky, 2008).

Stand – A contiguous group of trees generally uniform in age class distribution, composition, condition, and structure, and growing on a site of generally uniform quality, to be a distinguishable unit, such as mixed, pure, even-aged, and uneven-aged stands. A stand is the fundamental unit of silviculture reporting and record keeping.

Stray animal –

- " . . . livestock, bison or ratites whose owner is unknown or cannot be located, or any such animal whose owner is known but permits the animal to roam at large on the streets, alleys, roads, range or premises of another without permission." (Arizona Revised Statute: Title 3, Chapter 11, Article 7, 3-1401)
- Stray horses and burros are animals that do not meet the definition of a wild free-roaming horse in accordance with 16 USC 1332(b), 36 CFR 222.60(b)(13), and 36 CFR 222.63.

Structure – Structure includes both the vertical and horizontal dimensions of a vegetation type or plant community. The horizontal structure refers to spatial patterns of individual and groups of plants and openings, as well as plant size and species composition. The vertical component refers to the layers of vegetation between the forest floor and the top of the canopy. Each vegetation

type has its own structure. For example, forests have greater vertical structure than a grassland or woodland based on the height of the dominant species.

Suitable timberlands – Land to be managed for timber production on a regulated basis. Such lands are those which have been determined to meet the following criteria: (a) are available for timber production (i.e., not withdrawn for wilderness or other official designation by Congress, the Secretary of Agriculture, or Chief of the Forest Service); (b) are physically capable of producing crops of industrial wood without irreversible resource damage to soils productivity or watershed conditions; (c) adequate tree restocking within 5 years of final harvest is reasonably assured; (d) adequate information exists about responses to timber management activities; (e) timber management is cost efficient over the planning horizon in meeting forest objectives that include timber production; (f) timber production is consistent with meeting the management requirements and multiple use objectives specified in the forest plan or plan alternative; and (g) other management objectives do not limit timber production activities to the point where it is impossible to meet management requirements set forth in 36 CFR § 129.27 (per FSH 2409.13, WO Amendment 2409.13-92-1, O Code and Chapter 20).

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

Temporary road or trail – A road or trail necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not a forest road or trail and that is not included in a forest transportation atlas (36 CFR § 212.1).

Terrestrial ecosystem survey (TES) – Also called the terrestrial ecological unit inventory, the TES identifies ecological units for the Apache-Sitgreaves NFs that are distinct from each other in terms of their soil, vegetation, and climate components.

Thinning – An intermediate treatment made to reduce the stand density of trees primarily to improve growth, enhance forest health, recover potential mortality, emphasize desired tree species, and/or emphasize desired forest structure. It includes crown thinning (thinning from above, high thinning), free thinning, low thinning (thinning from below), selection thinning (dominant thinning), mechanical thinning (leaves trees in equally-spaced rows), and mechanized thinning (any spacing arrangement). Mechanized thinning should not be confused with mechanical thinning. As used in this plan "mechanized thinning" includes prescribed cuts made by both hand and/or mechanized equipment, as a distinction from prescribed thinning by use of wildland fire only. Traditional (cutting) prescribed thinning can be used with both even- and uneven-aged management systems. Thinning with prescribed fire can qualify as an intermediate treatment, but may not provide enough controlled tree selection to clearly fit in either management system.

Timber production – Purposefully growing, tending, harvesting, and regenerating regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use. In addition, managing land to provide commercial timber products on a regulated basis with planned, scheduled entries. It does not include firewood or harvest from unsuitable lands. (FSM 1900)

Traditional cultural property (TCP) – Defined in National Register Bulletin 38 as properties associated "with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community." TCPs can range from structures, mountains, and other landforms to plant gathering locations to communities. These areas are considered historic properties that may be eligible to the National Register of Historic Places.

Tree cutting – The cutting or removal of trees for wood fiber use and other multiple use purposes. Sometimes referred to as "timber harvest" or "thinning."

Tread Lightly!® – Outdoor ethics with a special focus on motorized and mechanized recreation. http://www.treadlightly.org

Unauthorized livestock – Any cattle, sheep, goat, hog, or equine not defined as a wild free-roaming horse or burro by 36 CFR § 222.20(b)(13), which is not authorized by permit (or Bill for Collection) to be upon the land on which the livestock is located and which is not related to use authorized by a grazing permit (livestock owned by other than a national forest grazing permit holder). Noncommercial pack and saddle stock used by recreationists, travelers, other forest visitors for occasional trips, as well as livestock to be trailed over an established driveway when there is no overnight stop on Forest Service administered land do not fall under this definition.

Unauthorized road or trail – A road or trail that is not a forest road or trail or a temporary road or trail and that is not included in a forest transportation atlas (36 CFR § 212.1). Sometimes referred to as a "user-created" road or trail.

Uncharacteristic wildfire – An increase in wildfire size, severity, and resistance to control compared to reference conditions which occurred historically. These fires result as a consequence of more continuous canopy cover, ladder fuels, and accumulated live and dead woody material. Uncharacteristic wildfires burn with more intensity; cause higher tree mortality; degrade watersheds; sterilize soils; and threaten adjacent communities, forest infrastructure, and wildlife habitat. See reference conditions

Uneven-aged forests – Forests that comprise three or more distinct age classes of trees, either inter-mixed or in small groups.

Uneven-aged management – The application of combined actions needed to simultaneously maintain continuous forest cover, recurring regeneration of desirable species, and the orderly growth and development of trees through a range of diameter or age classes to provide a sustained yield of forest products. Cutting is usually regulated by specifying the number or proportion of trees of particular sizes to retain within each area, thereby maintaining a planned distribution of size classes. Cutting methods that develop and maintain uneven-aged stands are single-tree selection and group selection.

Unplanned ignition – The initiation of a wildland fire by lightning or unauthorized and accidental human-caused fires. See wildfire.

Use of wildland fire - Management of either wildfire or prescribed fire to meet resource objectives specified in land management plans.

Values to be protected (values at risk) - Includes property; structures; physical improvements; natural and culture resources; community infrastructure; and economic, environmental, and social values.

Vigor – Relates to the relative robustness of a plant in comparison to other individuals of the same species. It is reflected primarily by the size of a plant (i.e., height, weight) and its parts in relation to its age and the environment in which it is growing.

Wild and scenic rivers – These rivers are free-flowing and have at least one outstandingly remarkable value. Eligible and suitable rivers are given a tentative classification of wild, scenic, or recreational. These rivers may be included in the National Wild and Scenic Rivers System.

- **Wild** – Those rivers or segments of rivers free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive, and waters unpolluted. These represent vestiges of primitive America.
- **Scenic** – Those rivers or segments of rivers free of impoundments, with shorelines or watersheds still largely primitive, and shorelines largely undeveloped but accessible in places by roads.
- **Recreational** – Those rivers or segments of rivers readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Wild free-roaming horses and burros --

- " . . . all unbranded and unclaimed horses and burros on public lands of the United States." (16 USC 1332(b)).
- "Wild free-roaming horses and burros mean all unbranded and unclaimed horses and burros and their progeny that have used lands of the National Forest System on or after December 15, 1971, or do hereafter use these lands as all or part of their habitat, but does not include any horse or burro introduced onto the National Forest System on or after December 15, 1971, by accident, negligence, or willful disregard of private ownership. Unbranded, claimed horses and burros for which the claim is found to be erroneous, are also considered as wild and free-roaming if they meet the criteria above." (36 CFR 222.60(b)(13))
- "Horses and burros not within the definition in § 222.20(b)(13) [recodified as 36 CFR § 222.60(b)(13)] which are introduced onto Wild Horse and Burro Territories or ranges after December 15, 1971, by accident, negligence, or willful disregard of private ownership, and which do not become intermingled with wild free-roaming horses or burros shall be considered as unauthorized livestock and treated in accordance with provisions in 36 CFR 261.7 and 262.10." (36 CFR 222.63)

Wild Horse and Burro Territory – " . . . lands of the National Forest System which are identified by the Chief, Forest Service, as lands which were territorial habitat of wild free-roaming horses and/or burros at the time of the passage of the Act." (36 CFR 222.60(b)(15))

Wildfire – Unplanned ignition of a wildland fire (e.g., fires caused by lightning or unauthorized and accidental human-caused fires) and escaped prescribed fires. See unplanned ignition.

Wildfire hazard – A fuel complex, defined by volume, type condition, arrangement, and location, that determines the degree or ease of ignition and of resistance to control.

Wildland – An area in which development is essentially nonexistent, except for roads, railroads, power lines, and similar transportation facilities. Structures, if any, are widely scattered.

Wildland fire – A general term describing any non-structure fire that occurs in the vegetation and/or natural fuels. The two types of wildland fire are wildfires and prescribed fires. Other terms such as "fire-use fires," "resource benefit fires," or "suppression fires" are not used in this plan.

Wildland-urban interface (WUI) – Wildland-urban interface includes those areas of resident populations at imminent risk from wildfire, and human developments having special significance. These areas may include critical communications sites, municipal watersheds, high voltage transmission lines, church camps, scout camps, research facilities, and other structures that, if destroyed by fire, would result in hardship to communities. These areas encompass not only the sites themselves, but also the continuous slopes and fuels that lead directly to the sites, regardless of the distance involved. (FSM 5140.5, Southwestern Region supplement).

Wildling – A native plant growing uncultivated in the wild: specifically, the collection or transplant of such whole live plants.

Windthrow – Trees susceptible to wind damage (e.g., uprooting, toppling, bole breakage).

Woody biomass – The trees and woody plants, including limbs, tops, needles, leaves, and other woody parts, grown in a forest, woodland, or grassland environment, that are the byproducts of forest management used to produce bioenergy and the full range of bio-based products.

- Preservation and United States Department of Agriculture Forest Service Southwestern Region

American Indian Rights and Interests

- FSM 1563 American Indian and Alaskan Native Relations
- FSH 1509.13 American Indian and Alaska Native Relations Handbook, Chapter 10 – Consultation with Tribes; Chapter 30 – Voluntary Closures
- FSH 2409.19 Renewable Resources Handbook, Chapter 60 – Stewardship Contracting, Amendment Number 2409.19-2008-7
- FSH 2409.18 Timber Sale Preparation Handbook, Chapter 80 –Uses of Timber Other Than Commercial Timber Sales Special Forest Products-Forest Botanical Products
- USC Title 25 Indians, Chapter 32 – A Cultural and Heritage Cooperation Authority, (Section: 3051-3057)
- 36 CFR § 261 Prohibitions in Areas Designated by Order; Closure of National Forest System Lands To Protect Privacy of Tribal Activities
- National Register Bulletin 38, Guidelines for Evaluating and Documenting Traditional Cultural Properties
- U.S. Department of Agriculture, Departmental Regulation Number 1350-002: Tribal Consultation, Coordination, and Collaboration
- U.S. Department of Agriculture, Report to the Secretary of Agriculture: USDA Policy and Procedures Review and Recommendations Indian Sacred Sites
- Memorandum of Understanding Regarding Interagency Coordination for Protection of Indian Sacred Sites
- Memorandum of Understanding Among the U.S. Department of Defense, U.S. Department of the Interior, U.S. Department of Agriculture, U.S. Department of Energy, and the Advisory Council on Historic Preservation Regarding Interagency Coordination and Collaboration for the Protection of Indian Sacred Sites
- Forest Service, Southwestern Region, Values, Attitudes and Beliefs Toward National Forest System Lands: Arizona Tribal Peoples (1996)
- U.S. Department of Agriculture, American Indians and Alaska Native: A Guide to USDA Programs
- Advisory Council on Historic Preservation, Consultation with Indian Tribes in the Section 106 Review Process: A Handbook

Forest Products

- FSM 2400 Timber Management
- FSH 2409.11 to FSH 2409.26 Timber Management Handbooks
- FSH 2409.18 Timber Sale Preparation Handbook, Chapter 80 – Uses of Timber Other Than Commercial Timber Sales Special Forest Products-Forest Botanical Products (Sections: Free Use, Administrative Use, Sales of Special Forest Products and Forest Botanical Products)

Livestock Grazing

- FSH 2209.13 Grazing Permit Administration Handbook, Southwestern Region Supplement
- Forest Service, Southwestern Region, Rangeland Analysis and Management Training Guide (2013)
- Bureau of Land Management, Measuring and Monitoring Plant Populations (Technical Reference 1730-1, 1998)
- Arizona Grazing Lands Association, Guide to Rangeland Monitoring and Assessment, (2012)

Minerals and Geology

- FSM 2356 Cave Management
- Memorandum of Understanding between the National Speleological Society and the Forest Service Cave and Karst Management
- 36 CFR § 228, Subpart A – Locatable Minerals
- 36 CFR Part 290 Cave Resources Management
- Central Arizona Grotto. 2015. Recommendations for Apache-Sitgreaves National Forest Cave and Karst Management **http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd511748.pdf**

Special Uses

- FSH 2709.11 Special Uses Handbook, Chapter 40 – Special Uses Administration
- FSH 2709.11 Special Uses Handbook, Chapter 50 – Standard Forms and Supplemental Clauses (Section: Policy)FSH 2709.11 Special Uses Handbook, Southwestern Region Supplement, Chapter 50 – Terms and Conditions

Water Uses

- Forest Service, Technical Guide to Managing Groundwater Resources Part 2 (Section: Overview of National Groundwater Policy) (FS-881)
- Forest Service, Groundwater-Dependent Ecosystems: Level II Inventory Field Guide (General Technical Report WO-86b)

Wildland Fire Management

- FSM 5142.1 Developing Prescribed Fire Burn Plans
- Forest Service, Southwestern Region, Minimum Impact Suppression Tactics
- Interagency Prescribed Fire Planning and Implementation Procedures Guide (Section: Prescribed Fire Planning Process)
- Interagency Standards for Fire and Aviation Operations (Red Book), Forest Service Wildland Fire and Aviation Program Organization and Responsibilities
- Interagency Guidance for Implementation of Federal Wildland Fire Management Policy (February 13, 2009)
- Annual Interagency Guidance for Preventing Spread of Aquatic Invasive Organisms Common to the Southwestern Region (Section: Technical Guidelines for Fire Operations)

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