Vegetation – Desired Condition

Guiding Vision For Vegetative Conditions

- The composition, structure, and function of vegetative conditions ensure resilience to natural role disturbances.
- Human caused disturbances mimic natural role disturbances and are planned within known resilience limits.
- The composition, abundance, and patchwork of vegetation conditions provide high quality water to local communities.
- Vegetative conditions provide self-perpetuating levels of products such as forage or wood fiber for public needs at local and regional levels consistent with other desired conditions and ecosystem processes.
- Diversity of structure, species composition, and successional stages provides habitat for a variety of wildlife species.

General

Landscape vegetation diversity includes an ever-changing patchwork of plant communities and structural conditions that are resilient, and operate at their site potential. Disturbances play their natural role in stimulating vegetation diversity. Abundant ground cover and resilient plant communities support stable watershed conditions. Standing dead trees along with down woody debris are adequate to provide vital ecological functions, such as habitats, nutrient cycling, and soil protection.

Desired Conditions By Specific Vegetation Groups

Aspen

Aspen ecosystems contain a variety of age classes, reflected in diverse structural components distributed across the landscape. Aspen systems regain dominance, reclaimed mainly from Englemann spruce/subalpine fir and mixed conifer types accompanied by marked increases in understory vegetation and groundcover. Conifers occupy less than 15% of the canopy (Campbell and Bartos, 2001). Mature and old aspen stand comprise about 30% of the structural class distribution. Young aspen comprise about 40% of the structural class distribution. Dominant aspen trees are generally less than 100 years old. Other age classes are evenly distributed between early, young, and mid age classes. Diverse aspen conditions support a larger variety of animals than any conifer community. (see Terrestrial and Aquatic desired conditions) Associated herbaceous and woody vegetation are highly variable. Perennial grasses and forbs dominate these areas with a range of shrub cover. Bare ground is minimal within aspen systems. Site productivity generally determines individual stand densities. Aspen regeneration success is achieved through an integrated sprout protection program that includes scale of treatments, type and timing of treatments, fencing, grazing adjustments, and coordination with the Utah Division of Wildlife Resources regarding deer and elk browsing.

Piñyon/Juniper

The extent of Piñyon and juniper (p/j) ecosystems is reduced closer to historical levels (O'Brien, 1999). Areas formerly dominated by p/j begin to be restored to grass/forb/shrub systems. Increases in grass, forbs, and shrubs contribute to improved watershed conditions (see Hydrology desired conditions). Mature and old structure conditions account for about 40% of p/j acres generally located within shallow, rocky soils and

rough topography where fuels are sparse. The remainder occurs in earlier successional stages containing a patchwork of shrubs and forage components. Natural disturbance regimes (generally fire) encourage an ever-changing patchwork restraining p/j from becoming dominant within sagebrush systems. Stand densities are generally low due to low site productivity. A variety of successional and structural stages promote habitats for a variety of species. (see Terrestrail and Aquatic desired conditions) Microbiotic crusts, which are generally found only in the p/j or dry sagebrush types, are present, protected, or encouraged to re-establish.

Sagebrush

Sagebrush (mainly big sage, Wyoming sage, silver sage, and black sage) along with a variety of grasses and forbs present a range of successional stages, sizes, and ages across the landscape. In these sagebrush systems 20-40% of the acres are in mid seral or climax successional stages. Herbaceous layers and microbiotic are well developed. This cover type is an irregular patchwork of successional stages. Grass, forb, and shrub ecosystem increases generally result from p/j treatments. Ground cover is characterized by perennial vegetation, moss, microbiotic crusts, litter, and/or naturally occurring rock that stabilizes soil and minimizes surface runoff.

Mountain brush

Mountain brush communities (combinations of mainly curl leaf mountain mahogany, birch leaf mountain mahogany, serviceberry, manzanita, currant, ceanothus, nine bark, rose, Gambel oak, Sonoran scrub oak, and sagebrush) along with a variety of grasses and forbs consist of multiple vegetation layers with alternating vertical dominance. Alternating prominence of shrub and herbaceous components relate to disturbance history. Sprouting species, such as the oaks, dominate where they are present. Soil type, elevation, precipitation patterns, and disturbance history influence specific combinations of species present. Ground cover, characterized by perennial vegetation, moss, litter, and/or naturally occurring rock, stabilizes soil and minimizes surface runoff.

Meadows

Meadows (open tree-less herbaceous community types dominated by grasses, forbs, and/or sedges) are restored, enhanced, or protected. Meadows encompass a broad environmental spectrum including: wet meadows (perennially saturated), dry meadows (only wet early in growing season), alpine meadows (high elevation), bogs (always wet, somewhat stagnant), and seeps. Ground cover is sufficient to provide protection from erosion.

Englemann spruce-subalpine fir

Englemann spruce-subalpine fir communities are composed either of pure Englemann spruce or mixed stands of spruce, subalpine fir and aspen. The mature and old structure components represent about 40% of the spruce-fir systems with the remainder distributed within younger structural classes (Reynolds et al. 1992). Insect and disease populations are generally at endemic levels. Localized insect or disease outbreaks are generally confined by a variety of structural and successional stages. Total acres in spruce-fir systems are likely to decline due to aspen reestablishment.

Mixed Conifer

Mixed conifer ecosystems are pure or mixed stands of, Douglas-fir, subalpine fir, white fir, ponderosa pine, blue spruce, limber pine, Englemann spruce, and aspen. Specific species composition is generally controlled

by elevation, aspect, soil type, and disturbance history. Mixed conifer forests are a variety of age classes, densities, and successional stages in varying patch sizes. Mature and old structure represents about 40% of conifer systems (Reynolds et al. 1992). Other structural classes are evenly distributed between early, young, and mid age stands. Insect outbreaks occur in localized areas due to a variety of densities, structural and successional stages. Total acres in mixed conifer systems are likely to decline due to aspen reestablishment or returning drier mixed conifer sites to historic ponderosa pine dominated systems.

Ponderosa pine

Ponderosa pine dominated systems generally occur at mid elevations on drier sites. Within these systems ponderosa pine comprises more than 75% of the tree species composition. The mature and old structure components represent about 40% of the ponderosa systems with the remainder distributed within younger structural classes (Reynolds et al. 1992). Insect and disease populations are generally at endemic levels. A variety of structural and successional stages generally confines localized outbreaks of insects. Stand densities will vary depending upon objectives and site productivity. Low intensity disturbances (generally fire but can also include needle sheath miner, and sugar pine tortrix outbreaks) occur at relatively short intervals.

Riparian

Riparian area vegetation is a diverse mix of species and structural stages. Riparian area vegetation includes though not limited to: conifers, aspen, willows, box elder, maple, dogwood, birch, alder, cottonwoods, sedges, rushes, and grasses. The stream substrate, gradient, elevation, and disturbance history determine plant occurrence. Plant communities are healthy and self-perpetuating. Woody vegetation provides a variety of size classes, wildlife habitats, stream shading, snags and down logs, aesthetic values, and supports other ecosystem functions. (see Terrestrial and Aquatic desired conditions) Riparian areas have stable stream banks, shorelines, and channels of streams and still water bodies, which meet State water quality standards. Riparian areas are dynamic and resilient to disturbances in structure, composition, and processes as a result of interactions among geology, soil, water, and vegetation. (see Watershed desired condition)

Unique vegetation

Unique or small population communities (such as Bristlecone pine or tall forb) display diversity in age and structure over the range of the community. These unique communities retain their viability through site-specific analysis and applying the most current knowledge. Restoration of historic unique plant community sites occurs where site features and availability of local genetic stock make projects feasible.

Threatened, Endangered, Sensitive, and Culturally Important plants

Activities or the lack of activity will not result in the listing of a new species. Appropriate actions, based on best current knowledge, recovery plans, conservation strategies and agreements, are applied to prevent declining and/or promote increasing population trends and distribution of these plants. Monitoring of plants that have been identified endangered, threatened, sensitive, proposed, or candidate continues.

Self-perpetuating populations of culturally important plants continue to be available for collection under Tribal rights.

Noxious Weed Infestations

Established noxious weed infestations do not increase, occur at low densities, or are reduced where appropriate. New infestations of noxious weeds are contained, reduced, or eradicated. The State of Utah and individual counties maintain current noxious weed lists.

Tamarisk, also known as saltcedar, is currently not listed in Utah as a noxious plant. However, this plant is significantly impacting some lower elevation riparian areas replacing cottonwood and willow. Due to a deep widespread root system along with its ability to sprout, tamarisk is very difficult to control usually requiring multiple treatments. Tamarisk populations are contained, reduced, or eradicated based on site-specific analysis.

Exotic species

Native plants from local genetic sources dominate landscapes. However, the use of exotic (non-native) species may be used to rebuild soils, limit cheatgrass expansion, or limit erosion until native species can reoccupy the area. Exotic species may also be used in areas where native plants are likely to be poor competitors (such as campgrounds, rock pits, frequent disturbance areas, road banks or other heavy use areas) or fire breaks (wildland-urban interface) to help modify fire behavior. In addition some exotic plants have become established (examples; Kentucky bluegrass, smooth brome, crested wheat grass) that they are considered "naturalized" and will continue to remain significant components of those systems.

Disturbance Processes – Desired Conditions

Disturbance processes (insects, diseases, fires, winds, floods) perform their natural roles in timing, intensities, duration, and scales. Human initiated disturbances (grazing, tree harvest, recreation activities, prescribed fire) are designed to complement natural role disturbances and operate within known resilience limits with any product removals being self-perpetuating through time. In some cases social considerations may limit natural role disturbance processes or events.

Fire

Restoring fire to dependent plant communities will contribute to long-term resiliency, integrity, and sustainability of ecosystems. Reintroducing fire, either wildfire or prescribed fire, to its natural role will require careful and appropriate application. Fire is actively suppressed where necessary to protect life, investments, and valuable natural resources. Social concerns (such as; proximity to structures, smoke management requirements, public health and safety) may limit the scale of fire short of historical levels. Other treatment techniques do not mimic the same effects as fire and can possibly influence future successional pathways.

Wildland-urban interface areas with adjacent structures have defensible space. Defensible space is defined as: the space where fuel has been modified to reduce wildfire intensity and where fire fighters can safely be placed to fight fire in cooperation with adjacent owners and other agencies. These wildland-urban interface areas retain some ecological functions, such as soil protection, some habitats, and nutrient cycling. Treated wildland-urban interface zones serve as a fire break for fire traveling from urban areas onto national forests. Wildland-urban interface areas with adjacent structures require periodic maintenance to retain defensible space characteristics.

Insects and Disease

Many insects, diseases, fungi, bacteria, and viruses are essential to ecosystem processes (for example; pollination, decay processes, nutrient recycling, food for higher organisms, provide habitat, or population control of forest "pests"). Ever-changing landscapes providing a variety of species composition, structural and successional stages along with adequate snags and down wood and debris assure continuation of these essential insects, diseases, and associated processes.

Outbreaks of bark beetles and defoliators occur in cycles generally linked to stand density, age, species composition and are often triggered by climatic influences. Localized outbreaks of bark beetles or defoliators are generally confined by a variety of structural and successional stages. If outbreaks of bark beetles or defoliators have the potential to impact recovery of threatened, endangered, or sensitive species, then a timely evaluation will be conducted to determine need of treatment. In some situations social considerations may trigger treatments.

Several native diseases, which are wood decay fungi, have the potential to impact desired conditions especially timber production objectives. The three major native diseases involved are: s-type Annosus root disease (impacts primarily white fir and Douglas-fir), Indian paint fungus (a heart rot that impacts primarily white fir), and tomentosus (a heart rot that impacts spruce). None of these native diseases have direct control possibilities and will persist. However, management actions are available that can minimize the spread or influence of these native diseases which can be implemented, as needed, to meet desired conditions and ecosystem processes.

Dwarf mistletoes, a parasitic plant that is generally host specific, will continue to be part of ecosystems providing habitat and a food source for wildlife.

There are no known exotic insects or diseases within the Dixie or Fishlake National Forests. If exotic insects or diseases are identified, then prompt evaluation will be required to determine potential impacts on desired conditions followed by appropriate and timely treatments if necessary.

Air quality and smoke management

Ambient air quality and visibility values across the Forest are within federal and state standards for particulate matter and visibility. Within the scope of Federal and State standards, for air quality, prescribed and wildland fires often mimic historical frequency, distribution, and size.

Soil resource

Most soils have at least minimal protective ground cover, soil organic matter, and coarse woody material. Soils have adequate physical properties for vegetative growth and soil-hydrologic function. Physical, chemical, and biological processes in most soils function similarly to soils that have not been harmfully disturbed. Degradation of soil quality and loss of soil productivity is prevented. Soil-hydrologic function and productivity in riparian areas is protected, preserving the ability to serve as a filter for water quality and regulation of nutrient cycling. Soil productivity, quality, and function are restored where adversely impacted and contributing to an overall decline in watershed condition.

Microbiotic crusts (composed of combinations of cyanobacteria (photosynthetic bacteria), green and brown algae, mosses, lichens, liverworts, fungi, and bacteria) are present, protected, or encouraged to re-establish. Microbiotic crusts (also known as cryptogamic, cryptobiotic, or microphytic crusts) create a crust of soil

particles bound together by organic materials that limit erosion, contribute to soil nutrients, and encourage native grass and forb establishment.

Human disturbances

Human influences play major or substantial roles in plant community composition, structural distribution, and disturbance intensities, patterns, and duration. Human activities (such as; timber harvest, domestic livestock grazing, use of fire, or recreation) meet desired conditions, move toward desired conditions, or at least not impair desired conditions. Associated product removal does not exceed self-perpetuating capabilities. Examples:

- Livestock grazing is permitted as an appropriate tool for achieving site-specific conditions and livestock grazing may also help meet social and economic desired conditions.
- Tree harvesting is an appropriate tool for achieving site specific structural and species composition desired conditions. Tree harvesting may also help meet social and economic desired conditions.
- Previous structure and species modification projects, such as chainings, are maintained for their original purpose, integrated into the landscape patchwork of structural and successional features, or continue on successional pathways.

BACKGROUND FOR VEGETATION DC

Specific levels of mature and old structure within Englemann spruce/subalpine fir and other conifer plant communities come from recommendations by the Northern Goshawk Scientific Committee. The Dixie and Fishlake National Forests amended forest plans in March 2000 to adopt the goshawk guidelines.

> Reynolds, Richard T.; Graham, Russell T.; Reiser, M. Hildegard; and others. 1992. Management recommendations for the northern goshawk in the southwestern United States. Gen. Tech. Rep. RM-217. Ft. Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 90p.
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> USDA Forest Service. 2000. Decision Notice and Environmental Assessment. Utah Northern Goshawk Project. USDA Forest Service. Intermountain Region. Signed March 14, 2000 By Jack A. Blackwell, Regional Forester.

Specific aspen structure, age, and species composition conditions are based upon research efforts conducted in the Intermountain Region and some on Monroe Mountain of the Fishlake National Forest.

> Campbell, Jr., Robert B.; and Bartos, Dale L. Aspen ecosystems: objectives for sustaining biodiversity (pgs 299-307). IN: Shepperd, W.D.; Binkley, D.; Bartos, D.L.; Stohlgren, T.J.; and Eskey, Lane G., compilers. 2001. Sustaining aspen in western landscapes: symposium proceedings; 13-15 June 2000; Grand Junction, CO. Proceedings P-18. Ft. Collins, CO; U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 460p.

Piñyon/juniper occupies some 7.5 million acres in Utah. Of these acres almost 70% are less than 150 years old. This indicates a substantial portion of piñyon/juniper expansion has occurred since Euro-American settlement.

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