Part 1: Vision

1.1 Pathway Regional Vision Statement

An interagency and public collaborative process called Pathway 2007 (Pathway) was initiated in 2004 to develop a common vision for the Lake Tahoe Basin and to coordinate planning efforts of the Forest Service (Forest Plan revision), the TRPA (Regional Plan Update), and the Lahontan Regional Water Quality Control Board/ Nevada Department of Environmental Protection (Lake Tahoe TMDL).

The Pathway process led to a regional vision statement for the Lake Tahoe Basin. *Desired conditions* and *vision statements quoted and adapted from Pathway* in this Forest Plan are shown *in italics.*

A Look into the Future *– The Lake Tahoe Basin is an exceptional place where communities thrive in harmony with the natural environment. The overwhelming presence of nature is apparent. The Lake is blue and clear, the air is clean, the region's ecosystem health, and natural sounds evident. Within communities, the economy is strong and sustainable; the population diverse and vital, the richness of everyday life is obvious. Based on mutual respect and the integration of human and natural communities, a balance exists that inspires and motivates residents, businesses, visitors, and governments alike to work together to maintain the Lake's value as a national and international treasure. Lake Tahoe is a truly unique and special place.*

Air Quality *– Air quality in the Lake Tahoe Basin is healthful for residents, visitors, ecosystems, and supports excellent visibility.*

Noise *– Noise levels provide for community and neighborhood serenity, abundant quiet recreational areas, and are not harmful to wildlife.*

Recreation *– The Lake Tahoe Basin's unique natural, cultural, and human environments provide sustainable recreation opportunities consistent with public desires and natural resource capacities. Recreation is linked to irreplaceable natural assets, the regional economy, and social well-being.*

Scenic Quality *– The Lake Tahoe Basin is internationally recognized for its outstanding natural beauty and is a resource of national significance. Characteristic views within the Basin are of the natural appearing forest, meadows, mountains, and expansive blue lake. The built environment harmonizes with this natural appearing setting in a sustainable manner that supports a vibrant community and healthy economy.*

Socio-Economics *(Social and Economic Systems) – There is a sustainable balance between environmental protection and conservation practices that provide the basis for the region's unique natural characteristics, a base recreation and tourism economy, other diverse economic sectors, attractively built communities, diverse social populations, and an exceptional quality of*

life. The Lake Tahoe Basin is an international model for sustainable alpine communities that apply the best-known practices in economic development, environmental protection, regulatory and planning process, community design, and inclusive resident and visitor communities.

***Soil Conservation** – Soil resources are conserved for the betterment of the environment and public. Soils function naturally, and land-use activities are assigned to suitable soils and landscape settings. Risks to life and property from natural hazards are reduced to acceptable levels.*

***Stream Environment Zones (SEZ)** – SEZs function at natural levels within the context of the watershed, and provide values commensurate with their functions. Societal and beneficial uses of SEZs, such as water management, cultural and scientific purposes, limited agriculture and recreation, are compatible with the naturally functioning conditions of SEZ lands.*

***Transportation** – An innovative multimodal transportation system is in place that gives priority to viable alternatives to the private automobile, appeals to users, and serves mobility needs, while improving the environmental and socioeconomic health of the Lake Tahoe Basin.*

***Vegetation** – Vegetation in the Lake Tahoe Basin is healthy and dynamic with the full complement of native plant communities, wildlife habitats, and ecological processes.*

***Water Quality** – Exceptional water quality provides restored clarity, environmental and human health, and human enjoyment of Lake Tahoe waters.*

***Wildlife and Fisheries** – Environmental conditions in the Lake Tahoe Basin support healthy and sustainable native terrestrial and aquatic animal populations and vegetation communities.*

1.2 Desired Conditions

Desired conditions (DCs) are long term goals, expressed as a state of being. The desired conditions form the base of the Plan and help to shape the other Plan components. They express the ecological, social, and economic management goals towards which the LTBMU directs management activities.

Some resources may currently be at or near the state described in the desired condition, requiring little more than maintenance, while achievement of the desired conditions for other resources may require many decades.

The desired conditions in this Plan were developed either as part of the Pathway process (those shown in *italics*), or specifically for the LTBMU. The Pathway desired conditions are more general than most of the desired conditions developed specifically for the LTBMU, and there is often overlap between content of the Pathway DCs and other DCs in this Plan; this is intended to clarify how the aspirational statement applies specifically to management by the Forest Service.

For example, consider the two DCs below. The concepts in the Pathway DC for Aquatic Ecosystems are included in the LTBMU DC, which adds detail for specific ecosystem elements:

> *The functional, physical, chemical, and biological integrity of the Lake Tahoe Basin's aquatic ecosystems are maintained at or above a sustainable level. (Pathway)*
>
> In-stream flows and floodplain inundation frequencies sustain aquatic habitats. Perennial flowing streams and associated lakes support a community of macro-invertebrates indicative of healthy aquatic habitat conditions, and naturally reproducing populations of native plant and animal species. Aquatic habitats are free of aquatic organism barriers and provide habitat characteristics needed for all life-history requirements.

Ecological Sustainability

Desired conditions for natural resources are included in this section, and include the physical resources (air, water, soil, watersheds), forest vegetation, fuels and fire management, aquatic and terrestrial habitats and species, and invasive species.

Physical Resources

Physical resources in the Lake Tahoe Basin are a key management emphasis for the Forest Service as well as our partner agencies. Physical resources include air quality, natural hazards, and physical components of watershed health, which include soil quality, surface and ground water quality, and geomorphic and hydrologic watershed processes.

Air quality management direction is found in several places throughout the Plan. Maintenance of air quality in the Class I airshed over Desolation Wilderness is discussed under Special Areas. The degree of darkness of the night sky is partly dependent on air quality – particulates in the air reflect light, making the night sky appear less dark and the stars less visible than under clear conditions. The dark night sky is discussed under Scenic Quality and Built Environment. Direction to mitigate air quality impacts from smoke is found in the Fuels and Fire Management sections. Human health concerns related to dust from naturally occurring asbestos (NOA) are an air quality issue on many National Forests, but the LTBMU has no mapped rock formations that contain asbestos minerals, so NOA is not discussed in this Plan.

Several kinds of potential natural hazards are present in the Lake Tahoe Basin. Knowledge of the risks associated with these hazards is essential to public safety. The LTBMU has completed a Natural Hazard Study to aid in project planning; including a map showing the approximate locations of various kinds of hazards (see Resource Overlay Maps).

A number of physical and biological elements in the Lake Tahoe Basin influence watershed response to natural or human-caused disturbance events. Watersheds have formed from different geologic materials (granite rock, volcanic rock, and glacial deposits), which have been acted upon by climate, vegetation, and other organisms over time to form particular soils and landforms with distinct ground and surface water drainage patterns.

The LTBMU was created from lands of three national Forests so that the Lake Tahoe Basin watershed could be more consistently managed as a unified whole. Coordinated planning and partnerships are integral to watershed management. Watershed restoration projects are undertaken to restore watershed processes and ecosystem structure, function, and composition impacted by past human disturbances such as:

- Urbanization of watersheds and encroachment of urban development into Stream Environment Zones (SEZs), resulting in a reduction in the size of SEZs and corresponding reductions in SEZ function.
- Grazing of livestock in meadows, resulting in soil compaction, changes in the distribution and composition of wetland, meadow, and riparian vegetation, soil erosion, streambank slope failure, and channel degradation;
- Legacy impacts such as old logging roads and other roads, railways, skid trails, flumes and diversions, which altered stream channel and surface water flow patterns, and resulted in fragmentation of riparian corridors.
- Diversion of stream flows and flood irrigation of certain meadows for pasture resulting in alterations in stream channel conditions, stream flow, and the composition of meadow vegetation;
- Relocation and straightening of stream channels, resulting in channel incision, channel widening, streambank erosion, lowering of groundwater, reduction in frequency of overbank flow, and increased downstream flooding;
- Exclusion of fire, along with altered hydrology (i.e. lowered groundwater tables), resulting in the encroachment of conifers into meadows, subsequently resulting in the drying out of these areas; and

- Breaching of barrier beaches, resulting in reduced functionality of SEZs close to the Lake.

The desired conditions for air quality, water quality, and soil quality are all interrelated and contribute to watershed health. Air quality can affect water quality; the Lake Tahoe TMDL includes requirements to reduce fine sediment and nutrient loading from atmospheric sources, and acid deposition from air-borne particles is monitored in high-elevation lakes throughout the Sierra Nevada. Ozone may damage vegetation. Adequate soil cover (vegetation, duff, and plant litter) protects soils from wind and water erosion, benefiting air and water quality. Soil and vegetation maintain water quality by processing nutrients and contaminants through uptake, retention, and chemical transformations. Soils improve water quality by retaining sediment and filtering water (precipitation, surface runoff, and overbank flows).

In addition to ecosystem benefits, physical resources provide social and aesthetic benefits that are recognized in the desired conditions for air quality and the clarity of Lake Tahoe. Similarly, social systems are enhanced through the maintenance of stream flows that support water-related recreation and groundwater levels that support groundwater-dependent ecosystems such as meadows and aspen stands that provide highly valued scenic backdrops. Soils contribute to scenic and recreational values through their role in sustaining healthy vegetation.

Air Quality

DC1. *Air quality in the Lake Tahoe Basin is healthy for humans and ecosystems. (Pathway)*

DC2. *Visibility in the Lake Tahoe Basin is at 2001 – 2003 levels or better. (Pathway)*

Natural Hazards

DC1. *Risks to life and property from natural hazards are reduced to acceptable levels through identification/mapping, avoidance of activities and development in hazardous areas, and modification of existing development to lessen potential impacts. Natural hazards include flooding, mass wasting (landslides, etc.), earthquakes, liquefaction, seiches, avalanches and volcanic hazards. (Pathway)*

Soil Quality

DC1. *Soils function commensurate with their land use to sustain native plant and animal life, regulate water flow, flooding and infiltration, cycle nutrients, and filter pathogens, excess nutrients and other pollutants.(Pathway)*

DC2. *Land coverage does not exceed the capability of the soil resources to offset the effects of impervious cover. The effects of impervious cover and disturbance are fully mitigated on a storm water zone basis. (Pathway)*

DC3. Soils infiltrate, transmit and store water at rates and in quantities commensurate with the soil and ecosystem type.

DC4. Soil productivity sustains healthy populations of native and desired non-native plant communities that are appropriate for the soil type. Surface and subsurface soil organic matter are within the expected range for the soil and ecosystem type.

DC5. Accelerated (human-caused) soil erosion and resultant sediment and nutrient transport to surface waters do not impact soil productivity or water quality.

Water Quality

Forest Service management primarily affects the water quality of Lake Tahoe through effects on other water bodies, especially the streams that drain into Lake Tahoe. Thus, the overall goal of achieving the Pathway DC for Lake Tahoe is directly correlated to achieving all the desired conditions described throughout this section.

DC1. *Lake Tahoe's status as one of the few ultraoligotrophic (extremely nutrient-poor) lakes in the world with unique transparency, color, and clarity is preserved. (adapted from Pathway)*

DC2. *Water quality conditions in the Lake Tahoe Basin protect human and environmental health. (Pathway)*

DC3. Water quality provides for all designated beneficial uses of surface and ground waters and meets the goals of the Clean Water Act and Safe Drinking Water Act; surface waters are fishable and swimmable, and surface and ground waters are suitable for drinking after normal treatment.

Hydrologic and Geomorphic Processes

This section includes desired conditions related to watershed resilience, stream channel geomorphic processes, and physical and chemical attributes of SEZs, as well as surface and ground water levels, groundwater recharge and discharge, and attenuation of peak flows.

Watershed resilience is expected to become increasingly important under a changing climate. Climate projections for the Lake Tahoe Basin include decreasing snowpack, earlier peak snowmelt, higher runoff in the winter and early spring, and decreased summer runoff. Flood potential would increase, principally due to earlier dates of peak daily flows and the increase in the proportion of precipitation falling as rain. Geomorphically stable stream channels and floodplains that exist in a state of dynamic equilibrium are better able to adjust to climate change impacts to hydrology, with fewer adverse impacts to aquatic habitat, water quality, or water quantity.

The term SEZ is specific to the Lake Tahoe Basin. Stream Environment Zones are areas that owe their biological and physical characteristics to the presence of surface or ground water. The SEZ concept includes wetlands as defined by the Army Corps of Engineers, but is broader, encompassing some ecotypes that are drier than wetlands. It is important to note that SEZs are ecotypes, not simply riparian buffer zones of a designated width. SEZs include lands adjacent to perennial, intermittent, and ephemeral streams, meadows and marshes, other areas of near-surface water influence, and groundwater-dependent ecosystems such as marshes, springs and fens.

Although desired conditions related to watershed function and the physical and chemical functions of SEZs are discussed in this section, while their biological functions are discussed under Biological Resources, the physical and biological characteristics of SEZs are interdependent. For example, desired conditions for fish habitat in streams are inextricably tied

to the structural and geomorphic desired conditions for stream channels that also contribute to watershed stability and water quality.

DC1. *SEZ physical and chemical processes function naturally within the constraints and dynamics of the watershed, including, but not limited to, natural hydrologic processes, water quality, and stormwater treatment capacity. (Pathway)*

DC2. *Beneficial uses of SEZ lands for water management, cultural and scientific purposes, limited agriculture, and recreation are compatible with the naturally functioning conditions, as stated by desired conditions for physical, chemical, and biological functioning. (Pathway)*

DC3. *Watershed characteristics, such as hydrologic, fluvial, and littoral geomorphic processes, approximate natural conditions where attainable. (Pathway)*

DC4. Watersheds have the following characteristics:

a) They are resilient and recover rapidly from natural and human disturbances.
b) They exhibit a high degree of connectivity along the stream, laterally across the floodplain and valley bottom, and vertically between surface and subsurface flows.
c) They provide important ecosystem services such as high quality water, recharge of streams and aquifers, the maintenance of riparian communities, and moderation of climate variability and change.
d) They maintain long-term soil productivity.

DC5. Stream processes associated with the geologic setting, valley type, geomorphology, and sediment transport influence erosion and deposition such that streams are in dynamic equilibrium. Channel pattern, profile, dimension, and degree of channel-floodplain connectivity exhibit characteristics consistent with valley types. Sediment regimes are close as possible to those with which aquatic and riparian biota evolved. Coarse woody debris forms and maintains pool and cover habitats. Streams do not exhibit signs of chronic sediment overloading (aggradation) or accelerated (human-caused) bank and bed erosion (incision and gully formation).

DC6. The physical structure and condition of streambanks and shorelines minimizes erosion and sustains desired habitat diversity. Healthy streambank and shoreline vegetation aid in streambank and shorezone stabilization, limit erosion, and provide channel and floodplain stability.

DC7. Groundwater levels and stream flow volume and timing sustain surface water-dependent and groundwater-dependent ecosystems. Groundwater recharge and discharge, and water tables, are not adversely impacted by management activity, and soil infiltration capacity is unimpaired in most areas. Levels of base flow during low-flow periods support flow-dependent baseline values and functions, including, but not limited to, riparian vegetation, water for wildlife groundwater recharge, wetlands, native and sport-fish habitats, recreation use, and aesthetics of flowing water.

Forest Vegetation, Fuels, and Fire Management

Comstock-era logging, fire exclusion, livestock grazing, and other past management practices have significantly altered ecological conditions throughout the Lake Tahoe Basin. These practices have contributed to increased forest vulnerability to drought, disease, and insect outbreaks, as well as high severity, stand-replacing wildfire, increasing risks to communities, natural resources, and scenic quality. In addition, fire exclusion has resulted in encroachment of shade-tolerant conifers into meadows and aspen stands, and their ecological and scenic values are at risk. As our understanding of ecosystem processes has improved, it has become apparent that a more complete integration of restoration efforts is necessary to successfully restore natural ecological processes and enhance and maintain the scenic quality for which the Lake Tahoe Basin is renowned, while reducing wildfire hazard to communities and key wildlife habitats.

Climate change is expected to bring rising air temperatures and changes in precipitation patterns, leading to an increased risk of high severity fire and shifts in species ranges, presenting complex challenges for management in the Lake Tahoe Basin. Perhaps chief among these challenges is how to sustainably balance restoration of fire-adapted ecosystems and fuels reduction projects to protect public and private assets, with the legal and biological necessity of preserving habitat for species that require dense canopy, late seral conditions.

Compared to pre-Comstock conditions, forest types are structurally much more homogeneous, and stand densities have increased in the montane and upper montane zones. Old growth conifer forests are under-represented compared to pre-Comstock conditions, and post-fire early seral conditions are found in large contiguous blocks rather than in scattered patches. Overall, these changes have had a negative effect on biodiversity, and forest resilience to fire, drought, insects, and pathogens has been compromised.

Where it is possible to achieve, reestablishment of fundamental ecosystem processes (fire, hydrology, propagule dispersal, etc.) will enhance the ability of Lake Tahoe Basin ecosystems to achieve dynamic equilibrium with changing climates. Since almost all predictions suggest a warmer and drier future, replication of forest composition and pattern based on historic (pre-Comstock) reference conditions is probably not optimal. However, since pre-Comstock conditions are seen as a waypoint on the trajectory to sustainable conditions under projected future climate conditions, pre-Comstock composition and structure are appropriate interim goals for forest stands in the Lake Tahoe Basin. Achieving approximate pre-Comstock conditions to the proportions outlined in Table 1 will help to restore key ecological processes that are currently absent or compromised. Stands that approximate pre-Comstock structure and composition would be better able to adapt to a warmer, drier climate than stands with the current structure and composition.

DC1. *A full range of native species, development stages, habitats, and ecological processes occurs. (Pathway)*

DC2. *Fuel conditions pose low wildfire risk to communities (Pathway).*

DC3. Disturbance processes occur in the ecosystem within the historic range of variability, and, where this is not feasible due to inherent risks, surrogates (e.g. prescribed fire, thinning) are used carefully to effectively mimic natural disturbance. Disturbance processes and/or their

surrogates create and maintain forest conditions that are well-adapted to current and future climates.

DC4. Stand and landscape conditions provide a diversity in vegetation types, stand structures, and species compositions that resembles patterns (figure 3) resulting from the interaction of disturbance regimes (e.g., wildland fire, insect and disease outbreaks, landslide and avalanche, windthrow, flooding, pre-Comstock aboriginal manipulations), variations in the physical landscape (e.g., elevation, soils, site productivity, aspect, slope), and the reigning climate.

DC5. The effects of disturbances like wildfire and insect/disease outbreak are similar to those expected under the natural range of variability for different parts of the landscape in the Lake Tahoe Basin, and, compared to the current disturbance regime, are less likely to result in major losses in wildlife habitat quality.

Figure 3. Cross-Section of a Typical Mixed-Conifer Old-Growth Forest Ecosystem

Illustration of the structural complexity and spatial patterning (horizontal heterogeneity) typical of high-quality (structural classes 4 and 5) late seral forest ecosystems (drawn by Robert Van Pelt; from Spies et al. 2006).

DC6. Unplanned fires in the Wildland-Urban Interface (WUI) and in Jeffrey pine/mixed conifer forests tend to spread slowly to moderately, depending on winds, and burn as a surface fire. Occasional single-tree or group torching might occur when the fire burns through a dense clump of young trees. This burning thins the stand, promotes rapid growth of surviving trees, and creates occasional large snags by killing adjacent large trees. Unplanned fires occurring outside of the WUI in densely stocked fir or lodgepole pine forests may produce intense, stand-replacing events consistent with natural fire regimes.

DC7. WUI zones (Map 7), are open canopied and dominated primarily by larger, fire-tolerant trees (e.g. thick-barked, self-pruning pine species). The WUI incorporates patterns of fuel condition that modify wildfire behavior by slowing large fire spread and reducing overall fire intensity and severity. Defensible space exists for all structures on Forest Service administrative sites, Forest Service permit authorization sites, and within 100 feet of non-federal structures.

Forest Vegetation Types

White fir-mixed conifer, Jeffrey pine, and the red fir types constitute approximately 60% of the land area in the Lake Tahoe Basin. This also includes areas where the majority of vegetation and terrestrial habitat management actions will occur. Therefore, more detailed desired conditions for these major vegetation types on the LTBMU have been developed.

Due to the ecological importance, declining extent and concerns for degrading condition of aspen stands in the basin, desired conditions for aspen also have been included here.

Except where it occurs in the WUI or where there are major insect outbreaks, the lodgepole pine type is not a major focus of land management concerns in the Lake Tahoe Basin. Likewise, the subalpine forest type is not the focus of land management concerns in the Lake Tahoe Basin, and therefore desired conditions are less detailed than for other forest types.

Jeffrey Pine

Structure

DC8. At the scale of the Lake Tahoe Basin as a whole, forest dominated by Jeffrey pine occupies more area than in 2003 and the trend is upward. At the landscape scale, the Jeffrey pine type is a highly heterogeneous mosaic of forest conditions composed of structural stages ranging from young to old trees (Table 2). Forest appearance is variable but generally uneven-aged and open; areas of even-aged structure are rare. Where they are even identifiable, patch sizes are generally extremely small (0.01 to 0.5 acres), and the mixing of trees of different ages and sizes makes identification of stands or seral stages difficult. The Jeffrey pine type is composed predominantly of vigorous trees, but dead and declining trees are a component and provide for snags and coarse woody debris (CWD). Stand basal areas range from 30 to 250 square feet per acre, with most stands falling below 100 square feet per acre. (See Table 2 for tree and snag density, CWD, loading).

Function

DC9. Natural ecological processes occur with little direct human influence. Fire and fire surrogates approximate a fire return interval of 7-20 years in Jeffrey pine stands. Stand-replacing fire occurs on an average of 5% of burned acres, with occasional more severe fires driven by extreme weather. Fires burn primarily on the forest floor and do not spread between canopy trees as active crown fire. Occasional crown torching leads to forest openings and generation of large snags. Except in extremely rare events, contiguous areas of

crown mortality after fire are less than 5 acres in size. High severity patches are principally confined to higher density, closed canopy stands and/or warm, upper slopes. Frequent, low severity fires are characteristic in this type, including throughout spotted owl and goshawk protected activity centers (PACs) and home range core areas (HRCAs).

Composition

DC10. The Jeffrey pine forest type is dominated by Jeffrey pine, with white fir as an associate. At the stand scale, the proportion of Jeffrey pine to shade tolerant species (e.g., white fir, red fir, incense cedar) is 3:1 or greater, except in moist and/or high productivity sites, where the proportion of shade tolerant species may be somewhat higher. Stands of (nearly) pure Jeffrey pine are not uncommon. Other accessory conifer species are present, especially in moist sites (e.g., incense cedar, lodgepole pine), areas of cold air drainage (e.g., lodgepole pine), and in very low productivity sites (e.g., western juniper, western white pine). Shrub cover is generally low to moderate due to frequent fire (or surrogates), but may be high in patches, especially where canopy cover is low, and where rocks, thin soils, and/or low fuel loads provide protection from frequent fire. Montane chaparral species are commonly found in such situations, and include species of manzanita and ceanothus, and bush chinquapin. In some open canopy stands of Jeffrey pine, sagebrush, bitterbrush, and other dryland shrubs may form an almost continuous understory. Diversity and cover of understory grasses and forbs is relatively high. In dense canopy stands, small and medium trees may be relatively dense. Early seral stands may support high levels of shrub cover.

White Fir-Mixed Conifer

Structure

DC11. At the scale of the Lake Tahoe Basin as a whole, forest dominated by white fir occupies less area than in 2003 and the trend is downward. At the landscape scale, the white fir-mixed conifer type is a heterogeneous mosaic of forest conditions composed of structural stages ranging from young to old trees (Table 2). Forest appearance is variable but generally uneven-aged; occasional areas of even-aged structure are present. Many stands on the landscape are open canopied (less than 50% canopy cover) and support a significant component of pines, but denser canopy stands are also common, especially on north slopes, in canyon bottoms, and at higher elevations. Where they are even identifiable, patch sizes are generally small (0.05 to 0.75 acres) and the mixing of trees of different ages and sizes makes identification of stands or seral stages difficult. The white fir-mixed conifer type is composed predominantly of vigorous trees, but dead and declining trees are a component and provide for snags and coarse woody debris (CWD). Stand basal areas range from 40 to 350 square feet per acre, with most stands falling below 250 square feet per acre. (See Table 2 for tree and

snag density, CWD loading). In white fir-mixed conifer forest, stand basal areas range from 40 to 350 square feet per acre, with most stands below 50 square feet per acre (See Table 2 for tree and snag density, and CWD loading).

Function

DC12. Natural ecological processes occur with little direct human influence. Fire and fire surrogates approximate a fire return interval of 10-30 years in white fir-mixed conifer stands. Frequent, low to mixed severity fires are characteristic in this type, including throughout spotted owl and goshawk PACs and HRCAs. Stand-replacing fire occurs on an average of 15% of burned acres, with occasional more severe fires driven by extreme weather. Fires burn primarily on the forest floor, rarely spreading between canopy trees as active crown fire. Crown torching leads to forest openings and generation of large snags. Except in rare events, contiguous areas of crown mortality after fire are less than 10 acres in size. High severity patches are principally confined to higher density, closed canopy stands and/or warm, upper slopes. Where this type overlaps the WUI, fires occur as surface fire due to fuels treatments.

Composition

DC13. In the Lake Tahoe Basin, the white fir-mixed conifer forest type is dominated by white fir, with Jeffrey pine, sugar pine, red fir and incense cedar as important associates. At the stand scale, the proportion of white fir to shade intolerant pines (e.g., Jeffrey pine, sugar pine) varies from about 1:1 on drier and warmer sites to 2:1 or greater in moist and/or high productivity sites. Sugar pine is an important member of the forest canopy, and the combination of decreased canopy cover of shade tolerant conifer species (from increased fire and fire surrogates) and the planting of blister rust-resistant seedlings leads to increases in its density and basal area. Shrub cover is generally low, due both to frequent fire (or surrogates) and areas of high tree canopy cover. Shrub cover may be high in patches, especially where rocks, thin soils, and/or low fuel loads provide protection from frequent fire, or in areas where high severity fire has occurred. In open stands, the forest understory is dominated by low shrubs, grasses and forbs. In dense canopy stands, small and medium trees may be of relatively high density. Early seral stands may support high levels of shrub cover.

Red Fir

Structure

DC14. At the landscape scale, the red fir forest type is a heterogeneous mosaic of forest conditions composed of structural stages ranging from young to old trees (Table 2). Forest appearance is variable but primarily composed of small, intergrading patches of even-aged trees. Stands are both closed (greater than 50% canopy cover) and open canopied. Dense canopy conditions are more common at lower elevations, where white fir may share dominance with red fir (red fir-white fir forest), but patches of high canopy cover are also found at higher elevations, usually in areas of deeper soils. Higher elevation red fir stands often share dominance with western white pine (red fir-western white pine forest) and may be very open and patchy, with substantial cover of montane chaparral species. Patch sizes are small to medium (0.05 to 5 acres), but may be larger, especially at lower elevation. The red fir forest type is composed predominantly of vigorous trees, but dead and declining trees are a component and provide for snags and CWD. Most CWD is found in the later stages of decay. In red fir-white fir forest, stand basal areas range from 50 to 700 square feet per acre, with most stands below 350 square feet per acre. In higher elevation red fir-western white pine forest, stand basal areas range from 5-600 square feet per acre, with most stands below 250 square feet per acre. (See Table 2 for tree and snag density, and CWD loading).

Function

DC15. Natural ecological processes occur with little direct human influence. Fire and fire surrogates approximate a fire return interval of 30-75 years in red fir stands, with fire return intervals increasing generally with elevation. Infrequent, low to mixed severity fires are characteristic in this type. Stand-replacing fire occurs on an average of 15-20% of burned acres, with occasional more severe fires driven by extreme weather. Fires are generally small, restricted in size by high fuel moistures and/or the patchy nature of the forest. Fires burn primarily on the forest floor, but crown torching is not uncommon and leads to forest openings and generation of large snags. Except in rare events, contiguous areas of crown mortality after fire are less than 10 acres in size. High severity patches are principally confined to higher density, closed canopy stands and/or warm, upper slopes.

Composition

DC16. In the Lake Tahoe Basin, the red fir forest type is dominated by red fir, with white fir and Jeffrey pine as important associates at lower elevations, and western white pine, lodgepole pine, and Jeffrey pine at higher elevations. Other conifers include sugar pine,

mountain hemlock, and western juniper. At higher elevations, especially in sites of low productivity, western white pine remains an important member of the forest canopy. Where feasible, the planting of blister rust-resistant western white pine seedlings leads to sustainability of its density and basal area. Lodgepole pine density in higher elevation red fir forests is reduced in areas where very dense stands regenerated after 19th century logging. Shrub cover is very heterogeneous. Shrub cover is generally low at lower elevations, except where there are gaps in the tree canopy, but maybe high (but patchy) at higher elevations, depending on the distribution of the tree canopy, soil depths, moisture availability, and other factors. Understory shrubs include gooseberry and snowberry. Montane chaparral shrub species (which occur primarily in openings) include huckleberry oak, bush chinquapin, and species of manzanita and ceanothus. Grass and forb cover is generally low, but can be high in stands with low canopy cover and suitable soil moisture. In dense canopy stands, small and medium trees may be of high density. Early seral stands may support high levels of shrub cover.

Table 1. Modeled Pre-Settlement Historical Reference and Current Conditions

Vegetation Description	Approx. Percent of Area 1935	Approx. Percent of Area 2003		Condition	Average Percent of Vegetation Type				
					Early-Seral	Mid-Seral, Closed Canopy	Mid-Seral, Open Canopy	Late-Seral, Open Canopy	Late-Seral, Closed Canopy
White fir mixed conifer	10	21		Reference (modeled)	10-20	5-15	10-15	30-40	20-30
				Current	3	16	11	40	30
Jeffrey pine	37	19		Reference (modeled)	5-15	5-10	25-30	45-50	5-10
				Current	4	42	49	4	1
Red fir	15	18	Red fir-white fir phase	Reference (modeled)	10-20	20-30	5-15	15-25	25-35
				Current	1	13	49	30	8
			Red fir-western white pine phase	Reference (modeled)	5-15	10-20	20-25	35-40	10-15
				Current	1	5	48	41	5

Notes:

- Historic Reference Condition modeling for major LTB forest types, developed from non-linear forest stand dynamics (state and transition) modeling, using disturbance regimes from pre-Euro-American settlement period. Climate inputs from 20th century. Values cannot be reliably applied to landscape units less than about 10,000 acres in area (Safford and Schmidt 2007).
- 1935 percent of area from Forest Service 1935 Vegetation Type Map (Wieslander);
- 2003 percent of area from Lake Tahoe Basin Existing Vegetation Map, Version 4.1, updated for the 2007 Angora Fire.
- Early, mid, and late seral stages represent stand quadratic mean diameters of 0-5”, 5-25”, and >25” dbh respectively.
- For white fir, and the red fir types, an “open” canopy has less than 50 percent closure while a closed canopy has closure greater than 50 percent; for Jeffrey pine, the open-closed cutoff is 40%. For detailed seral stage definitions, see Historic Reference Condition Mapping, Safford and Schmidt 2007,.
- Vegetation data to be updated as new information becomes available.

Table 2. Tree and Snag Density, Coarse Woody Debris (CWD) Loading for the Four Major Forest Types and Aspen

Forest Type	Stocking (stems)				Basal area (feet^2/acre)			
	Low	Median	Mean	High	Low	Median	Mean	High
White fir-mixed conifer	25	80	100	300	40	150	200	350
Jeffrey pine	15	60	70	200	30	80	100	250
Red fir-white fir	25	80	100	300	50	250	350	700
Red fir-western white pine	10	70	80	250	5	200	250	600
Forest Type	**Snags (>15" dbh/acre)**				**Coarse Woody Debris (tons/acre)**			
	Low	**Median**	**Mean**	**High**	**Low**	**Median**	**Mean**	**High**
White fir-mixed conifer	0	3	6	25	0	2	10	150
Jeffrey pine	0	1	3	15	0	1	6	100
Red fir-white fir	2	4	7	25	0	10	20	150
Red fir-western white pine	2	3	5	20	0	5	10	120

Aspen

Structure

DC17. The area of aspen-dominated forest in the Lake Tahoe Basin is greater than in 2009 and trending upward. In aspen stands, aspen dominate the overstory, with conifers comprising <25% of the canopy. Overall canopy cover is high (generally greater than 50%), and aspen comprise more than 75% of the overstory. Aspen forest is multi-layered, but sufficient light penetrates the canopy to support abundant undergrowth. Aspen stands are regenerating, restored, and/or maturing through natural disturbances or surrogate activities. In stable stands, aspen perpetuates itself with regular low-level regeneration; in seral stands, aspen regeneration is vigorous after ecological disturbances. Conifer density surrounding aspen stands is low enough that aspen stand expansion may occur if subsurface moisture availability permits. In early and mid-seral aspen stands, fire resistant conifers with old growth characteristics may comprise up to 25% of overstory canopy cover. Based on disturbance history, multiple age cohorts of aspen may be present. Conifer regeneration only rarely successfully introduces new trees into the stand, due to high seedling and sapling mortality from fire or fire surrogates. Basal areas range from 5-600 square feet per acre, with most stands falling below 250 square feet per acre. (See Table 2 for tree and snag density, and CWD loading).

Function

DC18. Fire and fire surrogates approximate a fire return interval of 25-50 years in aspen stands. Many low intensity fires burning in surrounding conifer forest types do not enter aspen forest due to high moisture content in the fuel and soil. Stand-replacing fire in aspen forest is uncommon, and most fires that enter stands burn at low to moderate severity, with only scattered mortality of overstory aspen individuals. Early and mid-seral aspen stands strongly ameliorate fire behavior and burn severity within aspen stands as well as in conifer stands immediately downwind.

DC19. Structural heterogeneity in aspen stands is high, and attracts a broad diversity of wildlife species due to the availability of cover, forage, and nesting opportunities.

DC20. Native insect and disease species are allowed to fulfill their ecological role in the aspen community, with minimal risk of compromising stand resilience.

DC21. Organic ground cover and herbaceous vegetation provide protection of soil, moisture infiltration and retention, and contribute to plant and animal diversity. Soil moisture in aspen stands is generally higher than in surrounding conifer stands, due to higher water tables,

lower rates of evapotranspiration, and higher organic matter content in the soil, which aids in moisture retention. There is little or no bare ground. Natural and anthropogenic disturbances are sufficient to maintain desired overall tree density, structure, species composition, coarse woody debris, and nutrient cycling.

Composition

DC22. Total vegetation cover and diversity is generally high in aspen stands, especially in the forb and grass components of the forest understory. Depending on location, elevation, and site characteristics, a number of conifer species may be present (up to 25% canopy cover), and other hardwoods like alder or willow may occur nearby. Shrub layers may be present, and may include a number of relatively shade-tolerant species (e.g., serviceberry, snowberry, gooseberry, currant) and also dryland shrubs (e.g., sagebrush, bitterbrush), depending on site characteristics.

Lodgepole Pine

DC23. Tree densities and basal areas are maintained at levels similar to current conditions in most stands. The areal extent of lodgepole pine-dominated forest is slightly reduced from 2009. Wherever possible, ecological processes occur with little direct human influence.

DC24. Stand density, age distribution, and structural heterogeneity are such that lodgepole pine is more resilient and tree mortality occurs at levels that would typically not exceed a few trees per acre. A heterogeneous pattern of mortality results in the creation of snags and CWD that varies irregularly across the landscape, and does not result in degrading wildlife habitat or scenic character. Levels of dwarf mistletoe are reduced, and infection by mistletoe does not result in stunting growth and/or premature tree mortality. Tree mortality caused by mountain pine beetle, and tree hazards associated with dwarf mistletoe, are limited in recreation areas.

Sub Alpine

DC25. Forest conditions are the result of natural ecological processes, which occur with little direct human influence.

DC26. Stand density, age distribution, and structural heterogeneity are such that whitebark pine, lodgepole pine, red fir, and other sub alpine tree species are more resilient, and tree mortality does not contribute to substantial deviations from typical patterns of vegetation succession. Where feasible, the planting of blister rust-resistant western white and whitebark pine seedlings leads to sustainability of their density and basal area, and tree mortality levels caused by mountain pine beetle do not contribute to an overall decrease in species sustainability.

Biological Resources

The complex of biological and geomorphic features in the Lake Tahoe basin provide habitat for a wide range of terrestrial and aquatic species. Past land use management has degraded some sensitive habitat while other habitats have been less affected. In addition to habitat degradation, non-native species and invasive species introductions have drastically altered some terrestrial and aquatic habitats. The LTBMU recognizes the importance of these resources both for native species that depend on them to meet life history requirements and for future generations to enjoy. Toward this end, desired conditions have been developed to guide future management in the preservation, enhancement, and, in some cases, restoration of biological resources.

Habitat and Species Diversity

This section provides specific management direction to maintain habitat quality and abundance to support native species and habitat on the LTBMU.

DC1. *The functional, physical, chemical, and biological integrity of the Lake Tahoe Basin's aquatic ecosystems are maintained at or above a sustainable level. (Pathway)*

DC2. *SEZ biological processes function naturally within the constraints and dynamics of the watershed. Vegetation, terrestrial wildlife, and aquatic communities are healthy and sustainable. (Pathway)*

DC3. *The functional, physical, chemical, and biological integrity of the Lake Tahoe Basin's terrestrial ecosystems are maintained at or above a sustainable level. (adapted from Pathway - vision)*

DC4. The diversity, distribution and health of biotic communities, and associated species in aquatic and terrestrial habitats (such as lakes, fens, wetlands, SEZs, and coniferous forests) perpetuate their unique ecological functions and biological diversity, and support sustainable populations of native plants and animal species. The connectivity, both spatial and temporal of these aquatic and terrestrial habitats at the landscape level allows for physically, chemically, and biologically unobstructed movement of native species sufficient for their survival, migration, reproduction and dispersal.

DC5. In-stream flows and floodplain inundation frequencies sustain aquatic habitats. Perennial flowing streams and associated lakes support a community of macro-invertebrates indicative of healthy aquatic habitat conditions, and naturally reproducing populations of native plant and animal species. Aquatic habitats are free of aquatic organism barriers and provide habitat characteristics needed for all life-history requirements.

DC6. Undeveloped and minimally disturbed shoreline and lagoon habitats are sufficient to support native species dependent on the interface between lake and terrestrial ecosystems. Where fluvial ecosystems meet the lake shoreline (including Lake Tahoe), geomorphic conditions and associated barrier beach formations are retained to support marsh and lagoon habitats.

DC7. A complexity of meadow habitat types and successional patterns support native plant and animal communities. Meadow species composition is predominantly native, where graminoid species are well represented and vigorous, and regeneration occurs naturally. Healthy stands of willow, alder and aspen are present within and adjacent to meadows with suitable physical

conditions for these species. Natural disturbances and management activities are sufficient to maintain desired vegetation structure, species diversity, and nutrient cycling.

DC8. The area of high-functioning meadow vegetation (as defined by the Pacific Southwest Region range monitoring protocol) is higher than in 2009 (LTBMU data) and meadow wetness is maintained or increasing as determined by species composition.

DC9. The abundance, spatial distribution, and size and decay classes of both standing (snags) and CWD meet the habitat requirements of native species that utilize these structures.

DC10. Terrestrial and aquatic habitat connectivity continues to provide unobstructed movement sufficient for survival, migration, reproduction, and dispersal given the potential effects of climate change on habitat and species.

DC11. The pattern and degree of forest fragmentation is consistent with natural landscape heterogeneity, including all seral stages, and meets the habitat needs of terrestrial wildlife species that are generally vulnerable to extensive forest openings, edge effects, and gaps in the forest canopy.

DC12. Ecological conditions throughout the Plan area contribute to the recovery of Federal Threatened (T) and Endangered (E) species, and prevent listing of Federal Candidate species (C), Federal Proposed species (P), and Forest Service Sensitive species (FSS).

DC13. Ecological conditions throughout the Plan area sustain or enhance native species and support self-sustaining communities of native plants and animals.

DC14. The forest supports well distributed and connected habitat for FSS, and TRPA identified native species. These identified populations and habitats are ecologically sustainable, self-sustaining, well-distributed, and well-connected.

DC15. Native non-game fishes, including but not limited to, Lahontan tui chub, Tahoe sucker, Lahontan redside, Paiute sculpin and mountain whitefish are well distributed in watershed stream reaches and are able to utilize near shore lake habitats throughout their historic range.

DC16. Selected rocky habitats support healthy and sustainable populations of rare plant and animal species including but not limited to Tahoe draba (*Draba asterophora var. asterophora*), long-petaled lewisia (*Lewisia longipetala*), and Mount Lyell salamander (*Hydromantes platycephalus*).

DC17. Cliff, cave, and cave surrogate habitats (e.g., mines, buildings, etc.) recognized as important to the survival, migration, reproduction, and dispersal of species dependent on these habitats are suitable and accessible for these uses consistent with site capability. Measures to protect and ensure human safety are compatible with maintaining or enhancing accessibility for these species.

DC18. Conifer stands adjacent to wetlands, wet meadows, and open water habitats between Emerald Bay and Taylor Creek, and near Marlette Lake, and in newly discovered special status raptor locations, have the following characteristics:

a) Conifer stands are open canopied, late seral, and Jeffrey pine-dominated in composition and structure;

b) Several trees exist in each stand that are larger in diameter and taller than the dominant tree canopy, particularly trees greater than 40 inches dbh and at least 100 feet tall with dead tops and robust, open branch structures;
c) Higher than average levels of snags for the stand type are present, composed of the largest tree size classes and diverse decay classes.

Invasive Species Management (Aquatic and Terrestrial)

This management direction is included to help maintain habitat quality and native species diversity. The management direction is applied to species identified as invasive by California Invasive Plant Council, Lake Tahoe Basin Weed Coordinating Group, Nevada Department of Agriculture (NDA) and the California Department of Food and Agriculture (CDFA).

DC19. Invasive species do not occur as a component of aquatic or terrestrial ecosystems or compete with native species for critical resources.

Protected Activity Centers and Home Range Core Areas (PACs and HRCAs)

This section describes the desired conditions for northern goshawk and California spotted owl PACs and California spotted owl HRCAs. PACs and HRCAs are established and maintained to protect suitable habitat components for these species.

DC20. Suitable nesting and foraging habitat within California spotted owl and northern goshawk PACs and California spotted owl HRCAs is maintained and degraded habitat is enhanced.

DC21. California spotted owl and northern goshawk PACs have the following mature-forest structure:

a) at least two tree canopy layers,
b) dominant and co-dominant trees with average diameters of at least 24 inches dbh,
c) at least 50 percent canopy cover, and
d) higher than average levels of snags (preferably larger than 45 inches dbh) for the stand type, and downed woody material (preferably larger than 20 inches in diameter at the large end) in diverse decay classes, distributed unevenly.

DC22. California spotted owl HRCAs have the following structure:

a) at least two tree canopy layers,
b) dominant and co-dominant trees with average diameters of at least 24 inches dbh,
c) at least 50 percent canopy cover, and
d) higher than average levels of snags (preferably larger than 45 inches dbh) for the stand type, and downed woody material (preferably larger than 20 inches in diameter at the large end), in diverse decay classes, distributed unevenly.

DC23. Highly suitable California spotted owl and northern goshawk breeding, roosting, and foraging habitats exist in spotted owl and goshawk territories within and overlapping the

Lake Tahoe basin; these habitats trend towards resistance to large-scale disturbances such as severe wildland fire and pathogen/disease/insect mortality outbreaks. The trend in spotted owl and goshawk occupancy, survival, and productivity in these territories are maintained or increased over time within the capability of the landscape.

Species Refuge Areas

Species Refuge Areas (SRAs) are defined as areas of quality habitat for Threatened and Endangered Species (FSH 1909.12, Ch. 40, Sec. 43.22a), species proposed for listing, candidate species, and species that have been recently de-listed where regulatory agency monitoring is still considered necessary. These areas either currently provide habitat for Federal Threatened (T), Endangered (E), Candidate (C), and Proposed (P) species or have potential to provide habitat needed for future recovery.

Species included are Lahontan cutthroat trout, Sierra Nevada yellow legged frog, whitebark pine, and Tahoe yellow cress. This list is subject to change when species are added or removed.

DC24. Lahontan cutthroat trout (LCT) populations are naturally self-sustaining, well-distributed, and well-connected, forming meta-populations that can expand and endure natural disturbances. Culverts or other structures do not inhibit migration unless deemed necessary to maintain upstream population integrity. Current and future water-bodies identified by the Tahoe Basin Recovery Implementation Team support naturally reproducing populations of Lahontan cutthroat trout. Current recovery areas in the Upper Truckee River watersheds (from Meiss Meadows to the Southern extent of Christmas Valley) and Fallen Leaf Lake(including Glen Alpine Creek) are suitable for Lahontan cutthroat trout and have the following characteristics:

a) Upper Truckee River, upstream of the natural fish barrier, is free from brook trout and aquatic invasive species, such as whirling disease pathogens;

b) Fallen Leaf Lake and Glen Alpine Creek are free of aquatic invasive species and support LCT life histories.

c) In addition, current and future fluvial and lacustrine systems where recovery occurs exhibit the following aquatic habitat characteristics: riffles, runs, pools, spawning gravels, CWD, and in-lake structure are complex and well-connected.

DC25. Sierra Nevada (mountain) yellow-legged frogs occupy, persist, and colonize in historic lake and stream habitats that are fishless. Habitat for self-sustaining populations is present in identified lakes, streams, and meadow habitats. Population expansion efforts continue to enhance/restore habitat identified as historic or potential habitat. Suitable habitat is free from invasives, including *Batrachochytrium dendrobatidis* fungus (Bd), and introduced fishes (e.g. brook trout), and has well-connected micro-habitats for frog dispersal.

DC26. Tahoe yellow cress persists in sandy beach habitat around Lake Tahoe, despite periodic high water levels and human-related impacts; through time individual populations change, but losses are countered by colonization.

DC27. Stand density, age distribution, and structural heterogeneity are such that whitebark pine is more resilient and tree mortality occurs at levels that would typically not exceed a few

trees per acre. A heterogeneous pattern of mortality results in the creation of snags and coarse woody debris (CWD) that varies irregularly across the landscape, and does not result in degrading wildlife habitat or scenic character. Levels of white pine blister rust are reduced, and infection does not result in premature tree mortality. Tree mortality caused by mountain pine beetle and tree hazards associated with white pine blister rust are limited in recreation areas.

Social and Economic Sustainability

This section includes desired conditions that focus on the human environment, including recreation, conservation and interpretive education and visitor services, stewardship and partnerships, scenic quality, cultural resources and tribal relations, noise, the road and trail system and other aspects of the built environment, lands and minerals, and permitted uses. These desired conditions represent goals to provide important social benefits to Lake Tahoe Basin communities, part-time residents, and visitors, and contributions to the local economy.

Recreation and Human Values

The LTBMU provides visitors and area residents an extraordinary variety of outdoor recreation opportunities concentrated within a relatively small area of NFS lands surrounding Lake Tahoe. The concentration of use—over 5.7 million visits per year on average, on 150,000 acres is among the highest of any National Forest in the country.

The spectrum of recreation opportunities within the Lake Tahoe Basin varies from highly developed resorts to remote wilderness. Visitors can find full service amenities at developed sites such as Camp Richardson and Heavenly Mountain Resorts, or discover the beautiful serenity of the Desolation Wilderness.

Those wishing to access Lake Tahoe can discover beautiful developed beaches at Pope, Baldwin, Meeks, and Nevada Beach, while the scenic east shore provides opportunities for more remote, less developed lakeshore activities and stunning panoramic views of the lake and the distant Sierra Nevada. Educational opportunities are numerous, with local area history presented at the Tallac Historic Site, and natural history interpreted at the Taylor Creek Visitor Center.

LTBMU lands are literally the backyard for residents and second-home owners. This proximity to NFS land is considered an amenity to the lifestyle of those fortunate to live in the Lake Tahoe Basin. Approximately 75% of LTBMU lands are classified as Wildland-Urban Intermix (WUI)—lands that are adjacent to urban development.

More remote backcountry areas, such as Freel Peak, Meiss, Desolation Wilderness, and Mt. Rose Wilderness, provide dispersed recreation opportunities to visitors seeking solitude or outdoor adventure.

LTBMU lands also provide human values such as aesthetic and spiritual values. Humans are drawn to natural places, and hold widely varying attitudes, beliefs, and perspectives about the ecosystem. Outdoor activities are often just pursued for the purposes of finding peace in nature, enjoying life, and just relaxing. People experience nature in ways that are not adequately

described as just “Recreation,” though some people in modern civilizations believe that the value of nature is found only in its "utilitarian value" (beneficial use). They would discount the inner perceptual and/or spiritual benefits of the intrinsic value of nature that may be experienced through just being able to access natural environments. These values, at time underrated, often become very important when considering resource related issues.

The desired conditions for recreation resources are based on these Sustainable Recreation Management principals and focus primarily on Recreation Opportunities, Public Access, Capital Investments, and Stewardship:. Motorized winter recreation (snowmobile) access is described in the LTBMU Snowmobile Guide. Motorized summer recreation is described in the Motor Vehicle Use map.

Recreation Opportunities

DC1. *A spectrum of high quality recreational opportunities are provided, while lake Tahoe Basin’s natural setting as an outstanding recreation destination is maintained. (Pathway)*

Public Access

DC2. *Encourage additional access where lawful and feasible to high-quality natural areas and shorezone consistent with desired resource conditions. (Pathway)*

DC3. Access to public lands is provided when consistent with user and management expectations.

Recreation Development

DC4. Programs and facilities are economically sustainable with available funds and resources.

Stewardship

DC5. Manage recreation resources to achieve a desired range of social expectations while maintaining the quality of the setting and natural resources.

DC6. Public stewardship will be encouraged through conservation education, interpretive programs and volunteer participation.

Recreation Special Uses

Recreation special use permits facilitate recreational opportunities on NFS lands for services not provided by the Forest Service. Recreation sites under special use permit are more commercial in nature than sites under Forest Service management, and offer a variety of services for a fee. Recreation special use permits include resorts, ski areas, recreation residences, outfitting and guiding, events, marinas, and organizational camps.

DC1. In response to identified need and management objectives, recreation special use permits facilitate delivery services not provided by the Forest Service.

Interpretive Services, Conservation Education, and Visitor Services

Interpretive Services, Conservation Education and Visitor Services educate visitors and the local community about public lands, natural and cultural resource management, recreation opportunities and stewardship principles. Interpretive Services educates hundreds of thousands of visitors each year through high quality short-term programs or contacts. Conservation Education fosters stewardship through a multi-year learning process resulting in a long-term community investment in natural resources. Visitor Services provides valuable information to the public about LTBMU projects, programs, recreation and regulations, and issues passes, permits and written materials such as maps and brochures.

Interpretive Services

The mission of the Interpretive Services program is to provide support and inspire high quality interpretation that instills respect and appreciation for the natural and cultural heritage of public and private lands and foster their protection and stewardship through time.

The Interpretive Services program primarily serves visitors to National Forest sites. The Taylor Creek Visitor Center and the Tallac Historic Site are the major public points of contact, providing guided and self-guided activities, educational programs, and living history throughout the summer months. Interagency partnership facilities are located at Meyers Interagency Visitor Center and Explore Tahoe Visitor Center. Self-guided interpretive sites include Inspiration Point Overlook, Stateline Lookout Overlook, Logan Shoals Vista, and Lam Watah Interpretive Trail.

Interpretive Services staff strive to “light a spark” within visitors so that they can continue to learn about their natural and cultural resources and how to take care of them. Interpretive products include wayside exhibits, interpretive signage, self-guided trails, brochures, and programs.

Providing a coordinated system of interpretive facilities and programs is an important way to help residents and visitors understand the connection between their behavior and the sustainability of Lake Tahoe’s special environment. Using public/private partnerships, interpretive services staffs visitor information facilities and services at major entry points and areas of concentrated use in the Lake Tahoe Basin. Interpretive Services staff assists in orienting visitors to the area’s special features, regulations and recreation opportunities.

The Federal Vision for the Environmental Improvement Program in the Lake Tahoe Basin states:

> “Provide a coordinated system of interpretive and educational facilities and programs that effectively meet the needs of target audiences and natural resource capacities. These programs should be designed to build an understanding of the connection between people’s behavior and their environment and to promote stewardship and sustainable management of the Lake Tahoe Basin’s resources.”

DC1. Interpretive activities and programs address outdoor recreation, human and natural history, water quality management, aquatic and terrestrial invasive species management, habitat and watershed restoration, hazardous fuels and forest health treatment efforts.

DC2. Accurate, up-to-date information, interpretation, and education about recreation opportunities and the natural and heritage resources of the Lake Tahoe Basin are provided. New technologies for delivery and access are used, and the messages are barrier free, in multiple languages.

DC3. Interpretation successfully garners support and acceptance of management actions, and reduces impacts to resources.

DC4. National Forest visitor centers, in partnership with other entities, provide quality information and education services that reinforce stewardship, forest health, and sustainability themes.

Conservation Education

Conservation Education serves learners of all ages, in formal and non-formal education programs. Students are primarily in grades K-12 served in the classroom and at forest sites. Education programs utilize nationally recognized curriculum and activity guides. Classroom education is tied to state content standards and builds student environmental literacy from awareness to understanding to informed action on environmental issues. Conservation Education works with numerous state, federal and local agencies, non-government organizations and community volunteers to deliver programs. For high-school age students, students become actively engaged in community and forest projects through the Generation Green club and/or through a youth employment program in the summer.

DC1. Education successfully garners support and acceptance of management actions, and successfully changes public perception over the long term, thus reducing impacts to resources.

DC2. Conservation Education program staff work with many internal and external partners to coordinate, develop, and deliver educational programs and materials. These partners include in-house programs in addition to State, Tribal, and local agencies, nonprofit organizations, and schools.

Visitor Services

Visitor Services staff are often the first Forest Service contact for the visiting public. They provide information on recreation opportunities, appropriate behavior, special events and attractions at forest offices and visitor centers. Visitor service products include maps, and recreation opportunity guides. Sales of interpretive publications and maps are provided by the interpretive association.

DC1. *Residents and visitors are educated about the recreation opportunities, appropriate behavior, and unique natural and cultural environments of Lake Tahoe. (Pathway)*

Partnerships

The LTBMU relies on its dedicated partners and volunteers to successfully manage the NFS lands and to attain stewardship goals. Current partnerships with other entities help reduce hazardous fuels, build trails, restore historic sites, provide interpretive programs, restore habitats, remove noxious weeds, and take part in many other management activities.

DC1. *LTBMU and partner organizations capitalize on mutual interests and goals to efficiently and effectively achieve desired outcomes. Community members, interested stakeholders, regulatory agencies, and leaders from local jurisdictions are well-informed of ecosystem processes and management challenges, and work cooperatively to resolve issues. These partners gather and share information allowing for more accurate and responsive decision-making. (Adapted from Pathway)*

Scenic Quality

The public has expressed a strong desire to maintain the scenic integrity of the Lake Tahoe Basin, while accommodating forest management activities on public lands. Key valued scenic attributes include overall scenic quality of the natural environment, lake views, and dark night sky views (minimization of lighting to allow for dominance of natural, nighttime light). Other public desires include flexibility in design development to ensure that desired community character is achieved, and prevention of further loss of critical views.

DC1. *Scenery viewed from Lake Tahoe and the Basin's major roadways, public recreation areas, trails and urban centers predominantly displays natural-appearing forest, meadows, mountains, and the shoreline of Lake Tahoe. Development, where visible, appears subordinate to and harmonious with the surrounding setting. (Pathway)*

DC2. *Views of the night sky from the naturally-appearing areas of the Basin are conducive to star gazing. Light emanating from the built environment is carefully controlled to ensure safety and security and does not encroach upon the regional dark sky. (Pathway)*

DC3. Management activities promote scenic stability and increase resistance to visual disruption resulting from disturbance events. Landscape alterations complement and blend with the characteristic landscape of the Lake Tahoe Basin. Vegetation treatments are designed to produce natural-appearing diverse forest structure.

Cultural Resources

Historic resources within the Lake Tahoe Basin reflect America's history and diverse cultures. The documentation, preservation, and interpretation of historic resources are integral to the LTBMU's management. Historic artifacts, sites, and features provide clues used to reconstruct human history in the Lake Tahoe Basin.

Cultural resources are characteristic of the following aspects or periods of Lake Tahoe Basin history:

- Early prehistoric occupation from approximately 10,000 to 1,500 years ago;
- Washoe tribal occupation, which has been demonstrated to extend back at least 1,500 years;
- Basque sheepherders occupancy beginning in the mid-1800s, as evidenced by aspen carvings (arborglyphs);
- Campsites of Chinese laborers who dominated the cord-cutting and flume-tending industries that supported Comstock Lode silver mining;

- Comstock era (1859-1880) logging features such as flumes, transportation features, sawmills, habitation sites, log skids, etc.;
- Era of elite summer resorts (Tahoe Tallac, Tahoe Tavern, Brockway Hot Springs) in the late 1800s; era of lakeshore estates of the wealthy and elite built in the early twentieth century, which denote the beginning of Tahoe's tourism and recreation era; and
- Transportation features, such as the Pony Express Trail and the Lincoln Highway.

A program of research, protection, rehabilitation, and interpretation of cultural resources which are determined eligible for National Register of Historic Places or whose eligibility are undetermined is ongoing and effective. Known cultural resources are proactively managed to enhance their scientific, cultural, historical, and traditional values.

DC1. Significant cultural resources are in good to excellent physical condition. Sites are protected from physical damage and wear resulting from visitor use and natural deterioration.

Tribal Relations

For thousands of years, aboriginal peoples of the northern Sierra Mountains and the Great Basin traveled to the shores of Lake Tahoe in the spring to reaffirm tribal unity through shared cultural practices. The Lake Tahoe Basin is the heart of the Washoe Tribe's culture. Spiritual and cosmologic beliefs derived from tribal ancestral heritage in the Lake Tahoe Basin are inherently intertwined in the landscape and its natural features. Tribal cultural identity is closely tied to the presence of culturally significant resources and the indigenous practices that sustain them.

Access and use of culturally significant resources and places further supports the maintenance of social networks and related cultural and economic values. Economic opportunities afforded through government-to-government partnerships contribute to the economic stability and resiliency of the Washoe Tribe and its members. Additionally, approximately 24 acres of former NFS lands within the Lake Tahoe Basin is held in trust for the Washoe Tribe by the U.S. Department of the Interior. The Washoe Tribe of Nevada and California is the tribal government that works with the LTBMU on a government-to-government basis.

DC1. Native American communities have the opportunity to be involved in all phases of the planning process.

DC2. The LTBMU fulfills its responsibilities to the Washoe Tribe of Nevada and California through a well-integrated, visible, government-to-government relationship. Provided they are consistent with LTBMU's management, the Tribe's goals of cultural revitalization, traditional practices, and reestablishment of a land base, as well as trade and commerce, are supported by the Forest Service. Tribal consultation enhances the capacity of the LTBMU to resolve issues and develop collaborative opportunities for partnership.

DC3. Economic opportunities afforded through government-to-government partnerships contribute to the economic stability and resiliency of the Washoe Tribe and its members.

Noise

By definition, noise is 'unwanted sound." The LTBMU is involved with noise monitoring stemming from activities on National Forest lands and will continue to evaluate and address noise issues respective to meeting established laws and regulations and noise standards and thresholds.

DC1. *Single event noise levels are controlled to preserve the serenity of the community and neighborhood and provide abundant quiet recreation areas. (Pathway)*

DC2. *Noise levels are controlled to protect wildlife. (Pathway)*

Access and Travel Management

Roads and trails on LTBMU lands provide management, administrative, and recreation access to NFS lands in support of agency goals and objectives.

The goal of the Access and Travel Management Program is to provide and maintain economically, socially, and environmentally sustainable access. Economic sustainability balances maintenance needs with annual maintenance and reconstruction budgets and eliminates deferred maintenance. Social sustainability meets user needs by providing a spectrum of recreation opportunities, both summer and winter, and needed administrative access to NFS lands. Environmental sustainability is met through integrated BMPs, optimizing high capability locations, and designs that meet Forest Service guidelines.

DC1. *The LTBMU supports a multimodal transportation system that provides a viable alternative to the private automobile, while serving mobility needs. (Adapted from Pathway)*

DC2. The LTBMU transportation system, composed of roads and trails, is economically viable; environmentally compatible, responsive to public needs and desires, and efficiently managed. The transportation system provides access for administration, protection, utilization, and winter and summer recreation opportunities.

DC3. The transportation system is efficiently interconnected to state, county, and local public roads and other Federal roads and trails through collaborative access and travel management planning.

National Trails System

The National Trails System is a network of scenic, historic, and recreation trails created by the National Trails System Act of 1968. These nationally recognized trails provide for outdoor recreation needs, promote the enjoyment, appreciation, and preservation of open-air, outdoor areas and historic resources, and encourage public access and citizen involvement.

Trails that are part of the National Trail System fall into three categories_- National Scenic Trails, National Historic Trails and National Recreation Trails. National Scenic Trails and National Historic Trails are designated by congress and National Recreation Trails are designated by the Department of Agriculture or the Department of the Interior.

The Pacific Crest Trail (National Scenic Trail), Tahoe Rim Trail, Pope-Baldwin Bicycle Trail, and the Hawley Grade Trail (National Recreation Trails) are part of the National Trail System.

DC1. National trails system trails preserve the intended goals and values for which they were established.

Built Environment

For this Forest Plan, the built environment includes buildings that are federally owned and managed by the Forest Service and includes buildings that are managed through permit. Recreation residences and other structures associated with recreation and lands special use permits are discussed in the recreation special uses or non-recreation special uses sections.

DC1. Federally owned or managed facilities meet specified standards and meet the needs of the agency, and the public.

Minerals

The LTBMU is not well endowed with mineral resources. Although there were a few actively worked mines in the past, there are none in the basin at present, and the most recent operating plan was submitted prior to publication of the 1988 Forest Plan.

DC1. Mining and mineral leasing laws and regulations are administered in a manner which meets environmental guidelines and regulations for the Lake Tahoe Basin.

Lands

The lands program facilitates the acquisition, exchange, and donation of NFS lands, as well as surveying and marking property boundaries and resolving trespass violations.

DC1. Partnerships are developed and maintained with other governments, agencies and organizations to facilitate land adjustment (e.g., exchange, purchase, and donation) that will reduce fragmentation of public lands, increase public access to NFS lands and Lake Tahoe shoreline, and protect important natural and heritage resources.

DC2. Public land ownership boundaries are clearly marked on the ground, and land ownership information is easily accessible to the public.

Non-Recreation Special Uses

Permitted uses on NFS lands include rights of way for power lines, sewer lines and other utilities, cell phone and radio towers, water tanks and other infrastructure that serves local communities. Special use permits are also issued for various activities, as described below.

DC1. Community needs are met for utility and communication services (e.g., telephone, radio, commercial broadcasting, and two-way radio for public safety needs for local governments) as well as for transportation and access.

DC2. Access is available to NFS lands for research and monitoring that is compatible with other resource values, when disturbance is temporary.

DC3. Activities that are appropriate for the National Forest setting contribute to the enjoyment and stewardship of NFS lands. These activities may include photography and filming, weddings, religious ceremonies, fence construction, and construction staging.

Santini-Burton Acquired Lands / Urban Forest Parcels

Maintaining remnant forest stands within developed areas (commonly referred to as urban lots, urban intermix lands, or urban forest parcels) is essential to maintaining the ecological integrity of the Lake Tahoe Basin. Protection and restoration of these acquired lands directly influence attainment of forest-wide desired conditions.

Urban Forest Parcels consist mainly of lands that have been acquired by purchase, donation, or other means, under authority of Public Law 96-586 (Santini-Burton Act) of December 23, 1980. The acquisition of environmentally sensitive lands authorized by this act is often referred to as the urban lot program.

Many of the acquisitions are small lots (less than 1 acre) in urban subdivisions. The acquisition of urban lots serves 3 purposes:

1) Preventing residential development of environmentally sensitive lands;
2) Maintaining important areas within a watershed in a natural, undisturbed condition, allowing snowmelt water to infiltrate the soil surface and remove suspended sediments; and
3) Restoring lands in poor hydrologic condition.

DC1. Urban Forest Parcels are undeveloped, conserve natural forest conditions (open space) within the urban setting, support natural watershed function, and pose a low wildfire risk to communities.

DC2. Vegetation composition and structure is similar to general conservation areas.

DC3. Hazards (e.g., hazard trees) do not pose a threat to the public or infrastructure.

DC4. Personal private use (encroachments) and other unauthorized uses of urban forest parcels do not occur.