United States Department of Agriculture **Forest Service** **Lake Tahoe Basin Management Unit**
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Proposed Action for the Aspen Community Restoration Project

USDA Forest Service Pacific Southwest Region
Lake Tahoe Basin Management Unit
Eldorado and Placer counties, California; and
Carson City, Douglas, and Washoe counties, Nevada

I. Project Area Description

Aspen stands throughout the Lake Tahoe Basin Management Unit, on National Forest System lands, in Eldorado and Placer counties, California; and Carson City, Douglas, and Washoe counties, Nevada. Locations of known aspen stands at moderate, high, or highest risk of loss from the landscape within the LTBMU are shown in Figure 1.

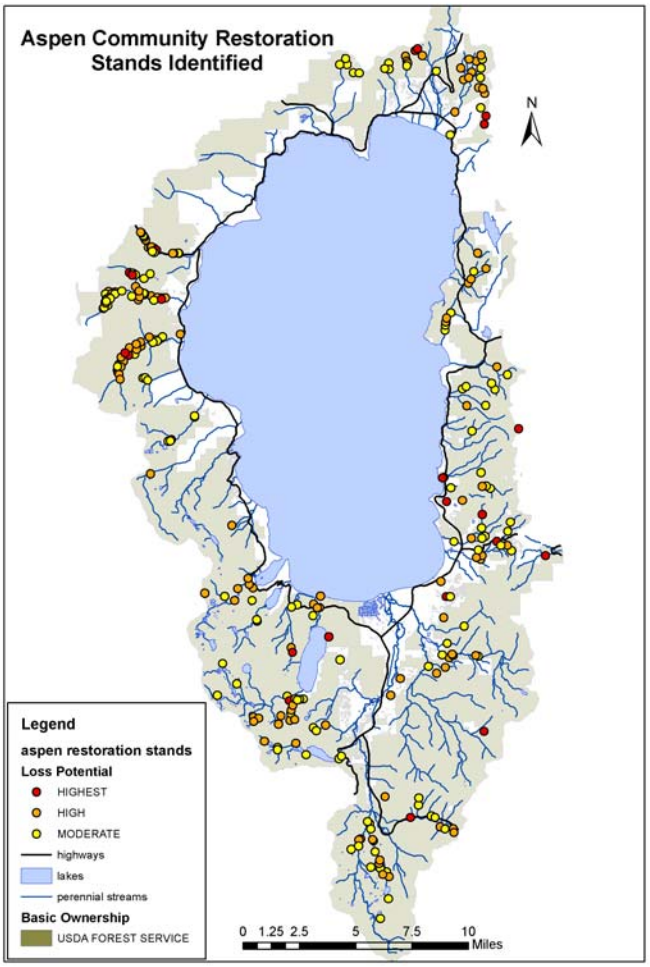

Figure 1. Aspen community stands on the LTBMU that are of moderate, high, and highest risk of loss.

II. Purpose & Need:

Aspen were identified in the Watershed Assessment (2000) as Ecologically Significant Areas (ESAs) because "they have an exceptionally diverse array of associated species," (DeByle and Zasada 1980; Verner 1988) yet aspen occupy less than two percent of the landscape on the LTBMU.

The Aspen Mapping and Condition Assessment Project (2002-2007) addressed Watershed Assessment "Biological Integrity Issue 6: The Need to Understand the Integrity and Condition of Ecologically Significant Areas in the Basin" and identified that approximately 64% of aspen stands on the forest are currently at moderate, high, or highest risk of loss. Risk of loss is an assessment of the probability that an aspen stand may not persist on the landscape based on stand conditions such as conifer encroachment and aspen regeneration.

Fire suppression efforts have increased fuel loading in aspen stands, which are adapted to frequent, low-intensity, low-duration wildfires. Elevated fuel loading is likely to increase burn severity and duration and increase the risk of loss of an aspen stand. Aspen stand resilience to wildfire will be improved and wildfire behavior within treated stands will be moderated through conifer removal. Visual and heritage resources (e.g., arborglyphs on aspen trees) are also less likely to be damaged or destroyed should a wildland fire occur after treatment. Aspen stands in the desired condition often act as natural fire-breaks on the landscape.

Conifer encroachment, especially in stands assessed to be at high or highest risk of loss, may suppress local water tables and limit the amount of subsurface water available to aspen. Suppressed local water tables may lead to accelerated conifer invasion as most conifer species prefer slightly drier soils than aspen do. A reduction in the amount of available subsurface water may also increase water stress and lead to increased aspen mortality and risk of stand loss as water-stressed aspen are less capable of repelling insects and diseases than aspen in the desired condition. Aspen stands in the desired condition contribute to natural hydrologic function.

Aspen stands provide habitat for a broad diversity of plant and animal species, as mentioned above, and yet are scarce on the landscape. Restoration of stands assessed to be at moderate, high, or highest risk of loss to the desired condition will benefit the biological diversity and ecological condition of the forest.

Goal and Objectives:

The goal of the Aspen Community Restoration Project is to restore approximately 1,115 acres of aspen stands over the next ten years that are assessed to be at moderate, high, or highest risk of loss from the landscape on National Forest System lands within the LTBMU. Stands within designated Wilderness areas are excluded from the proposed action. Objectives for restored aspen stands include the following:

1. Aspen dominate the upper canopy for the next 20 years;
2. Conifers comprise less than 25% of the canopy for the next 20 years;
3. Aspen regeneration is vigorous (i.e., $\geq$ 500 stems/acre) within three years;
4. Aspen stand expansion is initiated within three years;
5. Aspen stands regenerate and mature toward a low or negligible risk of loss during the 20 years following treatment; and
6. Aspen and associated deciduous tree, shrub, and herbaceous habitats are improved and benefit the biological diversity and ecological condition of the forest.

Secondary benefits anticipated to result from the restoration of aspen stands include:

1. Aspen stand resilience to wildfire will be improved and wildfire behavior within and adjacent to treated stands will be moderated through conifer removal.
    a. Wildland fire burn severity and duration within treated aspen stands will be reduced;
    b. Risks to heritage resources and visual resources from wildland fire will be reduced; and
    c. Aspen stands in the desired condition will act as natural fire-breaks on the landscape.
2. Aspen community health and vigor will be improved as sunlight and subsurface water become more readily available to aspen and associated understory plant communities (i.e., mountain pennyroyal and California corn lily).
    a. Greater availability of subsurface water will improve the ability of aspen to repel insects and diseases, especially during periods of drought;
    b. Resistance to conifer invasion will be improved in treated stands where reduced transpiration rates lead to increased subsurface water as conifers generally prefer drier soils than aspen do; and
    c. Infiltration and hydrologic function will improve in treated stands with healthy aspen understory plant communities.
3. The composition, diversity, and function of forested areas and associated wildlife communities will be improved.
4. Visual resources will be improved as treated aspen stands regenerate and mature.

The goal, objectives, and secondary benefits of the Aspen Community Restoration Project, as described above, are connected to and consistent with the following regional and local Forest Service management direction and goals:

<u>LTBMU Land and Resource Management Plan (LRMP)</u>

1. #15. Historical and Cultural Resource Goal – Protect our historical and cultural heritage;
2. #23. Riparian Area Goal – Riparian areas are able to perform their natural function in the environment, such as habitat for dependent species and for watershed protection;
3. #26. Timber Goal – Maintain healthy, diverse forest conditions through timber management practices designed primarily to achieve scenic, water quality, recreation, wildlife habitat, vegetative diversity, pest, and fire protection benefits rather than for wood fiber production;
4. #27. Visual Goal – Maintain an attractive forest appearance by meeting or exceeding established visual quality objectives; and
5. #31. Wildlife Goals – Maintain habitat for the existing variety of wildlife without preference to game or non-game species. Preserve and enhance populations of threatened, endangered, and sensitive species.

LRMP as amended by the Sierra Nevada Forest Plan Amendment, 2004 (SNFPA)

Goals for aquatic, riparian, meadow communities:

1. Maintain and restore habitat to support viable populations of native and desired non-native plant, invertebrate and vertebrate riparian-dependent species. Prevent new introductions of invasive species. Where invasive species are adversely affecting the viability of native species, work cooperatively with appropriate State and Federal wildlife agencies to reduce impacts to native populations;
2. Maintain and restore the species composition and structural diversity of plant and animal communities in riparian areas, wetlands and meadows to provide desired habitats and ecological functions;
3. Maintain and restore spatial and temporal connectivity for aquatic and riparian species within and between watersheds to provide physically, chemically, and biologically unobstructed movement for their survival, migration and reproduction;
4. Maintain and restore the connections of floodplains, channels, and water tables to distribute flood flows and sustain diverse habitats; and
5. Maintain and restore soils with favorable infiltration characteristics and diverse vegetative cover to absorb and filter precipitation and to sustain favorable conditions of stream flows.

III. Proposed Action

Vegetation will be treated within and/or adjacent to aspen stands that are determined to be at moderate, high, or highest risk of loss from the landscape (Fig. 1). The Aspen Community Mapping and Condition Assessment Project, completed in March 2007, identified that approximately 1,600 acres (64%) out of a total 2,500 acres of aspen on the LTBMU are at moderate, high, or highest risk of loss. The project area includes aspen stands at moderate, high, or highest risk of loss on forest system lands throughout the LTBMU with the exception of aspen stands located within other project areas that have (or will be) incorporating aspen vegetation treatments as part of their proposed action (i.e., current fuel reduction and forest health projects – South Shore Hazard Fuel Reduction and Healthy Forest Restoration Project, future fuel reduction and forest health projects – Carnelian, Spooner, & Incline Village Projects, Angora Fire Restoration Project, or watershed restoration projects – Blackwood Stream Restoration Project). An estimated 1,115 acres (70%) of the moderate, high, or highest risk aspen stands on the LTBMU are located outside other planned, proposed, and current vegetation treatment project areas and may be treated, as funding permits, by the Aspen Community Restoration Project described here. Stands within designated Wilderness areas will be excluded from this proposed action.

The Aspen Community Restoration Project will move aspen stands from an existing condition of moderate, high, or highest risk of loss toward the desired condition where: 1) the upper canopy is dominated by aspen; 2) conifers comprise less than 25% of the canopy; and 3) aspen regeneration is vigorous. Treated aspen stands are expected to regenerate and mature toward a low or negligible risk of loss during the estimated 20-year lifespan of the treatments.

The NEPA decision document for this project will address aspen community restoration for the LTBMU programmatically (i.e., how the forest would implement restoration of any given aspen stand within the scope of the project) so that restoration may occur as funds are available and may include aspen stands not yet discovered. NEPA will be completed by December 31, 2008. The LTBMU currently has partnership funding for implementation in selected aspen stands at risk, which may begin as early as January 2009.

Vegetation treatments (Fig. 2) designed to restore aspen communities may include (1) hand or mechanical thinning to reduce or eliminate conifer encroachment, (2) removal of aspen trees to promote root stimulation and stand regeneration, (3) aspen root separation, and/or (4) prescribed fire.

Hand thinning treatments would remove live trees up to 18 inches dbh and dead and down trees up to 20 inches dbh. Live trees larger than 18 inches dbh may be felled, but may not be removed due to practical constraints of moving trees with hand crews; branch wood from trees larger than 18 inches dbh may be removed to reduce potential fuel hazards.

Mechanical thinning treatments would not be constrained by an upper diameter limit, though live trees larger than 30 inches dbh would be removed only as necessary to achieve stand restoration objectives. Thinning treatments may extend beyond the perimeter of an aspen stand up to (1) 1 ½ times the height of aspen trees in the stand (the maximum extent of lateral aspen roots), (2) the distance required to prevent remaining, adjacent conifers from shading the aspen stand and suppressing aspen regeneration, or (3) up to 100 feet (to conduct thinning operations or process treatment by-products), whichever is greater. The additional spatial extent of vegetation treatments will allow more sunlight to reach the forest floor, stimulate aspen regeneration, promote expansion of aspen stands, and provide space to operate and process materials (e.g., trees and treatment by-products) outside of the stream environment zone (SEZ). Treatment by-products will be processed (e.g., chipped, masticated, lop-and-scattered, or piled for burning) or removed (i.e., for commercial processing or other uses) on or adjacent to aspen stands.

Thinning treatments that remove up to 90% of the existing basal area of aspen trees within an aspen stand would promote root stimulation and stand regeneration in stands – a valuable tool in late seral stands with healthy root systems, but lacking regeneration. Aspen removal would be accomplished in the same way as described for conifers.

Aspen root separation, the physical separation of roots from the nearest trees, stimulates aspen suckering and is typically accomplished mechanically, but may be accomplished by hand in very small stands. Root separation is achieved in the upper soil layers (typically within the upper 8 inches) as aspen roots occur just below the ground surface. Root separation treatments would occur within the maximum extent of lateral roots as described above.

Prescribed fire, which is very effective in stimulating aspen regeneration, may be used as the primary treatment method or subsequent to thinning treatments. Prescribed fire would be permitted to back into aspen stands as a surface fire only. In order to maximize aspen tree survival and root stimulation, fire intensity would be light to moderate and residence time

would be limited. Pile burning would occur within thinning treatments, outside the SEZ. Existing roads and trails would be utilized as fire lines to minimize new ground disturbance, though additional fire lines may need to be constructed with hand tools. All constructed fire lines would be rehabilitated after implementation following Best Management Practices (BMPs) and resource specific design features (below). Rehabilitation activities would include using hand crews and hand tools to rake in berms, install water bars, and scatter downed wood where appropriate.

Figure 2. An aspen stand, at high risk of loss from the landscape, before (left) and immediately after (right) treatment in Blackwood Canyon (note white aspen tree on left side of both pictures).

IV. PROJECT DESIGN FEATURES

The project includes design features to address environmental resources and to ensure consistency with the Forest Land and Resource Management Plan, as amended. Specific design features are listed below.

Scenic

1. Minimize cut tree stump heights to 6" maximum when measured from the uphill side, when cut stumps are visible in foreground views from FS System roads and trails.
2. Locate burn piles a minimum of 100 feet from FS System roads and 50 feet from FS System trails.
3. Implement fire prevention measures (e.g., clearing fuels or using fire resistant materials) to protect aspen trees intended for retention, and located within foreground views from FS System roads and trails, from scorching during prescribed fire activities.
4. Rehabilitate all temporary road surfaces and areas of disturbance following management activities. Lop and scatter vegetation on temporary road surfaces and surrounding areas to reduce visual contrast between temporary road alignment and surrounding landscape.
5. Rehabilitate all mechanical treatment landing/staging areas following management activities. Lop and scatter vegetation on landing/staging areas to reduce visual contrast between area of management activity and surrounding landscape.

Recreation

1. Public Safety – Public safety is a priority. If recreational activities occur in project areas, signs would be posted to notify the public of project objectives and safety concerns. Temporary area closures and/or temporary forest closures may be necessary to protect the public.
2. Wilderness –
    a. Treatments would not occur in designated Wilderness areas
3. Recreation Access –
    a. Access to recreation locations would not be altered permanently once restoration activities are completed.
    b. Project information would be provided in areas where the project may affect recreation activities.
    c. Thinning operations in high recreational use areas would be scheduled during non-peak use times and the public would be notified in advance.
    d. Mountain bikes would be allowed on system roads and trails in the project area during activities, but away from equipment operations and only when a forest area closure is not specified
    e. To prevent user-created trails that are not designed routes, barriers (e.g., boulders, split rail fence, and barriers/signs) would be established along treated areas adjacent to road or trail access.
4. Special Uses – The project would adhere to special use clauses where applicable (e.g., meet requirements or management direction of special use permits).

Engineering

1. Verify site-specific suitability for mechanical equipment prior to implementation.
2. Less than one mile (total) of temporary roads may be constructed; these will be decommissioned.
3. Temporary roads and landings
    a. No temporary roads will be built in designated Roadless areas.
    b. Locate temporary roads and landings on existing disturbed areas and alignments to minimize new ground disturbance where possible.
    c. Locate temporary roads and landings outside of stream environment zones (SEZs), except where equipment would cross an SEZ.
    d. Construction
        i. Remove vegetation from the alignment or landing in a manner consistent with project vegetation design features.
        ii. Minimize cut-and-fill slopes while grading the surface of the road or landing.
        iii. Install features such as water bars and rolling dips on road surfaces to reduce storm water run-off velocity and minimize erosion.
        iv. Install road features such as culverts or bridges to facilitate the free flow of perennial and seasonal drainages and ditches. Design these features for 3-year run-off events if anticipated to be in place through winter conditions.
        v. Landings will not exceed one acre in size.

vi. Identify vehicle turn-around locations.

e. Maintenance
    i. Monitor and maintain BMPs and SWPPP features.
f. Decommissioning
    i. Remove all installed features such as culverts and bridges.
    ii. Re-contour the road to closely approximate the local land surface.
    iii. Rip the road surface to a depth recommended by a soil scientist or proxy.
    iv. Seed and mulch treatment areas in consultation with soil, botany, and vegetation specialists.
    v. Strategically establish barriers (e.g., boulders or split-rail fence) and/or signs in open areas adjacent to travel routes to discourage user-created, non-system trails within treatment areas.

4. Apply Best Management Practices (BMPs) to all road construction, maintenance, and decommissioning. BMPs will require monitoring and maintenance throughout the life of the project and/or until the newly exposed soils have been stabilized. The following BMPs will be used on each temporary road.
    a. Install silt fencing or coir logs on downhill side of road during temporary road construction. Maintain silt fencing during temporary road use and decommissioning
    b. Delineate boundary and extent of temporary roads with fencing or flagging.
5. Apply a Storm Water Pollution Prevention Plan (SWPPP).

Urban Lots

1. Treatment prescriptions in urban lots would have the same objectives as elsewhere in the project area.
2. Ground-based mechanical treatments would be considered in urban lots when slope, soils, and access allow.
3. Trees that pose a hazard may be removed (no upper dbh limit).
4. Road shoulders may be used to process materials from urban lots when feasible.
5. Chipping material may be broadcast in upland urban lots, but would not be broadcast in urban lot SEZs. Chipping material would not exceed 3 inches in depth on any single urban lot.

Vegetation

1. Design vegetation treatments to restore aspen communities where applicable through the removal of encroaching conifers up to (1) 1 ½ times the height of aspen trees in the stand (the maximum extent of lateral aspen roots), (2) the distance required to prevent remaining, adjacent conifers from shading the aspen stand and suppressing aspen regeneration, or (3) up to 100 feet (to conduct thinning operations or process treatment by-products), whichever is greater.
2. Designate mechanical or hand treatments based on slope and soil types.
3. To promote aspen regeneration, conifer removal would not be constrained by an upper diameter limit. In most cases, trees marked for removal would be 30 inches dbh or less. The removal of trees larger than 30 inches dbh may occur following case-by-case determinations by the project manager and resource specialists regarding the likely

impact to aspen restoration objectives (e.g., as a source of conifer seeds and likely effect to aspen regeneration, growth, and expansion), ecosystem function (e.g., in context with historic logging and fire suppression, composition and distribution of like trees, and as a source of food and shelter to wildlife), and other resource values (e.g., as a scenic, heritage, or community resource). Trees larger than 30 inches dbh that exhibit old tree characteristics such as flat tops, large limbs, and large bark plates would be retained where feasible.

4. Up to 90 percent of existing aspen basal area may be removed to meet aspen restoration objectives.
5. Landings that are required to remove trees and process treatment by-products would not exceed one acre in size.
6. Ground-based mechanical treatments may be implemented when slopes, soils, and road access allow in upland and riparian conservation areas (RCAs) or SEZs (see below); hand treatments will be implemented where slopes and soils would not permit mechanical equipment or where no road access exists.
7. Mechanical thinning within RCAs and SEZs would utilize methods used successfully in the Heavenly Valley Creek SEZ Demonstration project, the Celio Ranch Project, or other local agency projects in these environments, where applicable and appropriate.
8. Hand thinning and mechanical thinning of stands located within or adjacent to SEZs will frequently occur as part of the Aspen Community Restoration Project. Primary design criteria for vegetation and fuels management within SEZs from Tahoe Regional Planning Agency (TRPA, code of ordinances, chapter 71.4C, Dec, 2004) include the following:
    - All vehicles used for tree removal would be restricted to areas outside SEZs or to existing roads within SEZs, except during over-snow operations.
    - Work in SEZs would be limited to the time of year when soils are dry or when snow conditions are at depth, compaction, and temperature levels determined by the soil scientist as suitable for the site for over-snow operations.
    - Work in SEZs may also include the use of "innovative technology" vehicles operating when soil conditions are dry enough so that the effects of these vehicles cause no greater soil or vegetation disturbance than over-snow tree removal.
    - Felled trees would be kept out of seasonal and perennial streams.
    - Materials and equipment would be staged in disturbed areas where available.
9. Treatment prescriptions would be based on individual stand evaluations.
10. Apply borax (trade name Sporax®) by hand, to a minimum stump size of 12 inches in diameter at the recommended rate, to all conifer species within four hours of felling to reduce the spread of annosus root disease caused by the fungus *Heterobasidion annosum* (Fr.) Bref. (Fomes annosus) in adjoining stands.
11. Applications of borax would follow all state and federal rules and regulations.
12. Applications of borax would not occur near running water or during sustained rainfall.
13. Storage of fuels or refueling would not be allowed in Riparian Conservation Areas or Critical Aquatic Refuges.

Fire

1. No pile burning or fire line construction will take place within SEZs.
2. All prescribed burning will adhere to Federal, Regional, State and local air quality regulations and guidelines.
3. Fire retardant and/or foam will not be applied within SEZs, unless required for fire suppression.
4. If drafting water from nearby water courses or bodies, use screening devices (with <2mm holes) for drafting. Use pumps with low entry velocity to minimize removal of aquatic species. Locate drafting sites to avoid adverse effects to stream flows and depletion of pool habitat. Drafting sites should be selected with the agreement of a hydrologist and/or fish biologist.
5. Rehabilitate control lines using hand tools and hand crews.
6. Install water bars as needed based on slope and connected length of fire line. Water bar spacing will be determined on a site-specific basis.
7. Chipped material will not be burned.
8. For multiple entries, piles will be offset to minimize effects to soils and hydrology.
9. Lop and scatter (underburn) units will be designed for minimal ground disturbance and burned in the spring or fall.
10. Fire will not be directly applied to SEZs; however, fire in underburn units would be allowed to creep into SEZs.

Wildlife

1. Design vegetation treatments located within northern goshawk and California spotted owl Protected Activity Centers (PACs) and TRPA goshawk disturbance zones that, where possible, result in at least the following: 1) two tree canopy layers; 2) dominant and co-dominant trees with average diameters of 24 inches DBH; 3) 60 to 70 percent canopy cover; 4) an average of five to eight snags (five in eastside pine and mixed conifer, six in Westside pine and mixed conifer, and eight in red fir forest types) per acre larger than 20 inches DBH and of variable decay classes; and 5) 15 tons of coarse woody debris (CWD) per acre larger than 20 inches in diameter (at the large end) and of variable decay classes.
2. Design vegetation treatments located within California spotted owl Home Range Core Areas (HRCAs) that, where possible, result in at least the following: 1) two tree canopy layers; 2) dominant and co-dominant trees with average diameters of 24 inches DBH; 3) 50 to 70 percent canopy cover; 4) an average of three to six snags (three in eastside pine and mixed conifer, four in Westside pine and mixed conifer, and six in red fir forest types) per acre larger than 20 inches DBH and of variable decay classes; and 5) 10 tons of coarse woody debris per acre larger than 20 inches in diameter (at the large end) and of variable decay classes.
3. Design vegetation treatments located within bald eagle wintering habitat mapped in the vicinity of Tallac Creek and Taylor Creek and in the Fallen Leaf Management Area adjacent to wetland, wet meadow, and open water habitats that, where possible, result in the following: 1) retention of trees greater than 40 inches dbh and greater than 98 feet tall; and 2) and an average of six snags per acre larger than 20 inches dbh in variable decay classes.

4. Design vegetation treatments within osprey nest stands that, where possible, result in the following: 1) retention of all known standing osprey nest trees; and 2) retention of an average of three trees per acre that are larger in diameter and taller than the dominant tree canopy, with an emphasis on dead topped trees with robust, open branch structures.
5. Implement limited operating periods (LOPs) to protect the breeding activities of LTBMU federally-listed and sensitive species, and TRPA special interest species, as determined by a LTBMU wildlife biologist.
6. Discovery of LTBMU federally-listed and sensitive species, and TRPA special interest species, or their reproductive sites, will be reported to a LTBMU wildlife biologist and managed as directed in the Forest Plan.

Fisheries and Aquatic Habitat

1. Use hand treatments in RCAs/SEZs or evaluate for the time of year for mechanical treatments to avoid impacts to fish migration and/or spawning.
2. Remove vegetation in streamside zones and over streams with an excess of standing and down vegetation, such as stream reaches that exceed 75% stream shading from dead and down or ladder fuels.
3. For streams lacking large woody debris for fish habitat, place trees larger than 12" diameter at breast height (dbh) into the stream, in locations prescribed by a LTBMU fisheries biologist.
4. Leave or reposition large woody debris in stream channels unless doing so would adversely affect channel stability (Forest Standard and Guide #15).
5. To maintain shading of stream banks along streams containing rainbow trout, retain at least 50% of the potential herbaceous and shrub cover and at least 20% of the potential tree canopy cover within treated stands. Where existing tree canopy cover is less than 20%, 80% of the potential will be retained. Between 35-70% of the stream should be shaded from 1100 to 1600 hours (Forest Standard and Guide #20).
6. Incorporate Best Management Practices (BMPs) prior to implementation to meet water quality objectives and maintain and improve the quality of surface water on the forest (Forest Standard and Guide #33).

Hydrology

1. Delineate SEZ boundaries prior to implementation.
2. Conduct a site evaluation to assess hydrologic impact potential. Evaluate in terms of hydrologic connectivity to a perennial channels, stream bank stability, soil stability, and suitability for treatment type (e.g. mechanical thinning, cable yarding, hand thinning etc…), and depth to ground water.
3. An LTBMU hydrologist will conduct the site evaluation and provide a resource report with sufficient detail for developing a water protection strategy; use resource report as documentation for State and Federal water protection permits.
4. Conduct ground disturbance activities during periods low stream flow and deep ground water from August 15 through October 15 for SEZ's. Ground disturbance could occur earlier if field conditions dictate.
5. Develop a water diversion, dewatering, and re-watering plan, if necessary, for sites located along perennial streams. The Forest Service will consult with LRWQCB for

sites located adjacent to 303D-listed streams and implement additional BMP measures as agreed between the agencies.

6. Develop a site-specific BMP strategy for State and Federal water quality protection permits. BMP strategy will include a description of type and application, location, and specifications for application.
7. Conduct soil and water best management practices monitoring during implementation. Details will be included as part of the Stormwater Protection Plan (SWPPP) as required by the Lahontan Regional Water Quality Control Board. SWPPP monitoring would include Regional Best Management Practices Evaluation Program (BMPEP) monitoring as described in the Regional BMPEP Monitoring Protocols. Temporary BMP Monitoring as described in the LTBMU TBMP Monitoring Plan, and short-term stream flow turbidity monitoring for projects in or near a live stream.

Sensitive Plants

1. Conduct sensitive plant surveys prior to treatment.
2. If any LTBMU sensitive plant species, special interest plant species, or sensitive plant communities (fens) are identified during surveys or project implementation, they will be flagged and avoided.
3. If any LTBMU sensitive plant species, special interest plant species, or sensitive plant communities (fens) are identified a buffer of up to 100 feet in diameter will be flagged around the sensitive resource. The specific area of the buffer will be determined on a site specific basis. The goal of the buffer will be to prevent direct disturbance to the plants and to protect the local habitat by minimizing disturbance to the soils, hydrology and mychorrhizal community.
4. Depending on the species and habitats identified, hand thinning could be used in buffered areas as long as impacts to hydrology, soils, and the mychorrhizal community are prevented.
5. Prescribed fire will be excluded from the buffered zones.
6. Directionally fell trees away from sensitive plant populations, sensitive plant communities (fens), or special interest plant species.
7. Any sensitive plant species, special interest plant species, or sensitive plant communities found within the project footprint will be monitored for three years following project implementation.

Noxious Weeds

1. Conduct noxious weed surveys prior to treatment. Weed infestations within the treatment area or along travel routes associated with the project area will be manually controlled/removed or "flagged and avoided" according to the species present and project constraints.
2. Do not locate staging areas (e.g., for equipment, materials, or crews) in weed infested areas.
3. All off-road equipment used on this project will be washed before moving into the project area to ensure that the equipment is free of soil, seeds, vegetative material, or other debris that could contain or hold seeds of noxious weeds. "Off-road equipment" includes all logging and construction equipment and such brushing equipment as brush

hogs, masticators, and chippers; it does not include log trucks, chip vans, service vehicles, water trucks, pickup trucks, and similar vehicles not intended for off-road use. However, it is recommended that all vehicles, especially large vehicles, are cleaned when they come into the Basin or come from a known weed infested area. Equipment will be considered clean when visual inspection does not reveal soil, seeds, plant material, or other such debris. When working in known weed infested areas equipment shall then be cleaned at a washing station before moving to other Forest Service system lands which do not contain noxious weeds.

4. All earth-moving equipment, gravel, fill, or other materials are required to be weed-free. Use onsite sand, gravel, rock, or organic matter when possible. Otherwise, obtain weed-free materials from gravel pits and fill sources that have been surveyed and approved by Nevada Department of Agriculture or by a botanist or ecologist at the Lake Tahoe Basin Management Unit.
5. The amount of ground and vegetation disturbance in the construction areas will be minimized. Where feasible reestablish vegetation on disturbed bare ground to minimize weed establishment and infestation. Revegetation is especially important in staging areas.
6. Weed-free mulches and seed sources will be used. Salvage topsoil from project area for use in onsite revegetation when possible, unless contaminated with noxious weeds. All activities that require seeding or planting must utilize locally collected native seed sources when possible. Plant and seed material should be collected from or near the project area, from within the same watershed, and at a similar elevation when possible. Persistent non-natives such as *Phleum pratense* (cultivated timothy), *Dactylis glomerata* (orchard grass), or *Lolium* spp. (ryegrass) will not be used. This requirement is consistent with the USFS Region 5 policy that directs the use of native plant material for revegetation and restoration for maintaining "the overall national goal of conserving the biodiversity, health, productivity, and sustainable use of forest, rangeland, and aquatic ecosystems". Seed mixes must be approved by a Forest Service botanist.
7. After the project is completed the LTBMU Noxious Weed Coordinator will be notified. Known noxious weed infestations within the project area will be monitored following project implementation to ensure additional weed species do not become established in the areas affected by the project and to ensure that known weeds do not spread.

Heritage

1. Survey all treatment areas, including all temporary roads, lands, and associated ground disturbing activities, which have not been previously surveyed, for cultural resources prior to implementation.
2. Protect all cultural properties from any impacts related to project activities. Design and implement site-specific protective measures (such as flagging and avoiding) for cultural properties in coordination with the project's heritage resources specialist.
3. Comply with Section 106 of the National Historic Preservation Act (P.L. 89-665, as amended) and the Advisory Council on Historic Preservation's regulations (36 CFR Part 800) and all applicable laws and regulations before project activities are implemented. Accomplish compliance with law and regulation as follows:

- In California, use the Region 5 Programmatic Agreement (PA) with the California State Preservation Officer and the Advisory Council on Historic Preservation to comply with Historic Preservation laws and regulations.
- In Nevada, use site-specific protective measures for cultural properties that result in a determination of "no historic properties affected" in consultation with the Nevada State Preservation Officer. Note: use the Programmatic Agreement with the Nevada State Historic Preservation Office, which is currently in review, if the agreement is authorized.

Lands

1. Review property boundaries located adjacent to non-forest system lands prior to implementation.
2. Property lines would be flagged and monuments would be recorded.
3. If monuments have been removed, these would be recorded and set at a later date.

United States Department of Agriculture
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