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Draft Land Management Plan

Part 3:

Design Criteria for the Southern California National Forests



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Part 3-Design Criteria for the Southern California National Forests

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Introduction

This document is the third of the three parts of the land management plans for the National Forests of southern California. Part 3 contains the design criteria. Design criteria are used in combination with the description of desired conditions, the identification of objectives and lists of actions or activities to guide the management of the southern California National Forests. This section consists of three parts. The first is an overview of the key laws that govern the management of National Forest System land. This is not a comprehensive list of all relevant laws; rather it is an overview intended to set the legal context for the management of the National Forest. A more complete list of applicable laws is located in Appendix A - Laws, Policies and Other Direction. The second part is the plan standards that are the legally required standards described in 36 CFR 219, and other standards that are required for resource management. The last section is a list of the other design criteria or guidance that will be referenced and incorporated as projects are designed to implement the direction in the plan and move toward achieving desired conditions over time. Implementation of design criteria will be evaluated annually through implementation monitoring of sample projects.

Key Laws Providing Direction for Southern California Land Management Plans

U.S. Mining Laws (Public Domain land) Act of May 10, 1872: Provides that all valuable mineral deposits in land belonging to the United States, both surveyed and unsurveyed, are free and open to exploration and purchase, and the land in which they are found to occupation and purchase by citizens of the United States and those who have declared their intention to become such, under regulations prescribed by law, and according to the local customs or rules of miners, so far as the same are applicable and not inconsistent with the laws of the United States. There are a number of Acts which modify the mining laws as applied to local areas by prohibiting entry altogether or by limiting or restricting the use which may be made of the surface and the right, title or interest which may pass through patent.

Organic Administration Act of June 4, 1897: Authorizes the President to modify or revoke any instrument creating a National Forest; states that no National Forest may be established except to improve and protect the forest within its boundaries, for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States. Authorizes the Secretary of Agriculture to promulgate rules and regulations to regulate the use and occupancy of the National Forests.

The Migratory Bird Treaty Act (1918): Controls the taking, killing, possessing, transportation, and importation of migratory birds.

The Clean Water Act, a series of Acts from 1948 to 1987: Passed to maintain and restore the chemical, physical, and biological integrity of the nation's waters. It requires compliance with State and federal pollution control measures; no degradation of instream water quality needed to support designated uses; control of nonpoint sources of water pollution through conservation or best management practices; federal agency leadership in controlling nonpoint pollution from managed land; and rigorous criteria for controlling pollution discharges into waters of the United States.

Multiple-Use Sustained-Yield Act of June 12, 1960: States that it is the policy of Congress that the National Forests are established and shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes, and authorizes and directs the Secretary of Agriculture to develop and administer the renewable surface resources of the National Forests for the multiple use and sustained yield of the products and services obtained there from.

Wilderness Act of September 3, 1964: Established a National Wilderness Preservation System to be composed of federally owned areas designated by Congress as "wilderness areas" and administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness. Provides for the protection of these areas, the preservation of their wilderness character, and for the

gathering and dissemination of information regarding their use and enjoyment as wilderness. States that no federal land shall be designated as "wilderness areas" except as provided for in the act or by a subsequent act.

Land and Water Conservation Fund Act of September 3, 1964: Authorizes the appropriation of funds for federal assistance to States in planning, acquisition, and development of needed land and water areas and facilities and for the federal acquisition and development of certain land and other areas for the purposes of preserving, developing, and assuring accessibility to outdoor recreation resources.

The National Historic Preservation Act (1966), as amended: States that it shall be the policy of the Federal Government to provide leadership in the administration of the National Preservation program in partnership with States, tribes, Native Hawaiians, and local governments. It requires agencies to take into account the affect of management activities on significant heritage resources (Section 106). It also requires development of long-term management plans that locate and protect sites, and then integrate sites and information into overall agency programs and goals (Section 110). The implementing regulations for Section 106 (36 CFR 800) were amended in 1999 (and revised in 2000). It also established the National Register of Historic Places (36 CFR 60, 36 CFR 63), and the Advisory Council on Historic Preservation whose purpose is to advise the President and the Congress on matters relating to historic preservation.

Wild and Scenic Rivers Act of October 2, 1968: Instituted a National Wild and Scenic Rivers System by designating the initial components of that system, and by prescribing the methods by which and standards to which additional components may be added to the system from time to time. Designated rivers have requirements with time frames for preparing and implementing a Comprehensive River Management Plan and a boundary declaration.

National Environmental Policy Act of January 1, 1970: Directs all federal agencies to consider and report the potential environmental impacts of proposed federal actions, and established the Council on Environmental Quality.

Endangered Species Act of December 28, 1973: Authorizes the determination and listing of species as endangered and threatened; prohibits unauthorized taking, possession, sale, and transport of endangered species; provides authority to acquire land for the conservation of listed species, using Land and Water Conservation Funds; authorizes establishment of cooperative agreements and grants-in-aid to States that establish and maintain programs for endangered and threatened wildlife and plants; authorizes the assessment of civil and criminal penalties for violating the act or regulations; and, authorizes the payment of rewards to anyone furnishing information leading to arrest and conviction for any violation of the act or any regulation issued there under. Section 7 of the act requires federal agencies to insure that any action authorized, funded or carried out by them is not likely to jeopardize the continued existence of listed species or modify their critical habitat. Section 7(a)(1) of the act identifies the affirmative conservation duties of agencies and requires all federal agencies to carry out programs aimed at recovery of listed species.

Federal Noxious Weed Act of January 3, 1975: Authorizes the Secretary of Agriculture to designate plants as noxious weeds by regulation; to prohibit the movement of all such weeds in interstate or foreign commerce except under permit; to inspect, seize and destroy products, and to quarantine areas, if necessary to prevent the spread of such weeds; and to cooperate with other federal, State and local agencies, farmers associations, and private individuals in measures to control, eradicate, prevent, or retard the spread of such weeds.

Federal Land Policy and Management Act of October 21, 1976: Requires that public land be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values; that, where appropriate, will preserve and protect certain public land in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use. Also states that the United States shall receive fair market value of the use of the public land and their resources unless otherwise provided for by law.

National Forest Management Act of October 22, 1976: The National Forest Management Act reorganized, expanded and otherwise amended the Forest and Rangeland Renewable Resources Planning Act of 1974, which called for the management of renewable resources on National Forest land. The National Forest Management Act requires the Secretary of Agriculture to assess forest land, develop a management program based on multiple-use, sustained-yield principles, and implement a resource management plan for each unit of the National Forest system. It is the primary statute governing the administration of National Forests.

Clean Air Act of August 7, 1977, as amended (1977 and 1990): Enacted to protect and enhance the quality of the nation's air resources; to initiate and accelerate a national research and development program to achieve the prevention and control of air pollution; to provide technical and financial assistance to State and local governments in connection with the development and execution of their air pollution prevention and control programs; and, to encourage and assist the development and operation of regional air pollution prevention and control programs.

Soil and Water Resources Conservation Act of November 18, 1977: Provides for a continuing appraisal of the United States' soil, water and related resources, including fish and wildlife habitats, and a soil and water conservation program to assist landowners and land users in furthering soil and water conservation.

Surface Mining Control and Reclamation Act of August 3, 1977: Authorizes the Secretary of Agriculture to enter into agreements with landowners, providing for land stabilization, erosion, and sediment control, and reclamation through conservation treatment, including measures for the conservation and development of soil, water, woodland, wildlife, and recreation resources, and agricultural productivity of such land.

Public Rangelands Improvement Act of October 25, 1978: Establishes and reaffirms the national policy and commitment to inventory and identify current public rangeland conditions and trends; manage, maintain and improve the condition of public rangelands so that they become as productive as feasible for all rangeland values in accordance with management objectives and the land use planning process; charge a fee for public grazing use which is equitable; continue the policy of protecting wild free-roaming horses and burros from capture, branding, harassment, or death, while at the same time facilitating the removal and disposal of excess wild free-roaming horses and burros which pose a threat to themselves and their habitat and to other rangeland values.

Healthy Forests Restoration Act of 2003: Improves the capacity of the Secretary of Agriculture and the Secretary of the Interior to plan and conduct hazardous fuels reduction projects on National Forest System land and Bureau of Land Management land aimed at protecting communities, watersheds, and certain other at-risk land from catastrophic wildfire, to enhance efforts to protect watersheds and address threats to forest and rangeland health, including catastrophic wildfire, across the landscape, and for other purposes.

Plan Standards Required by (36 CFR 219)

Vegetation Management Standards

S1: Long-Term Sustained Yield (36 CFR 219.27 (c) (2)). No land is currently identified as suitable in southern California and the allowable sale quantity (ASQ) is zero.

S2: Appropriate Vegetation Management Practices(Including Limitations on Even-Aged Timber Harvest Methods) 36 CFR 219.27 (c) (6). The silvicultural systems shown, by forest and rangeland cover-types in Table 3.1 (Appropriate Silviculture Systems and Vegetation Treatments by General Forest Type) which meet the management objectives for the landscape or individual stands of trees within a landscape setting are acceptable. These silvicultural systems are to be applied in a manner that will ensure natural regeneration where artificial regeneration is not necessary for other resource objectives.

S3: Maximum Size Openings Created by Timber Harvest (36 CFR 219.27 (d) (2). Table 3.1 (Appropriate Silviculture Systems and Vegetation Treatments by General Forest Type) identifies the maximum allowable opening acreage for forest types. This limit shall not apply to the size of areas harvested as a result of natural catastrophic conditions such as fire, insect and disease attack, or windstorm.

S5: Design shaded fuelbreaks in forests to be open averaging no more than 40% crown closure along the center corridor with an understory of grasses, forbs, and small shrubs. Thinning of forests occurs from below, favoring retention of large-diameter trees. Crown closure and understory vegetation increase gradually, moving from the inside toward the outside of the shaded fuelbreak.

S6: Treat freshly cut live conifer stumps to prevent the establishment of annosus root disease.

S120: There are extensive areas within and adjacent to the National Forests of southern California meeting the definition of wildland urban interface (WUI) as described in the Healthy Forests Restoration Act of 2003. Wildland urban interface, as defined by the Act, is a variable width up to 1.5 miles from communities at risk or as defined in individual community fire protection plans. This land management plan further identifies a direct protection buffer (WUI Defense Zone) and an indirect protection buffer (WUI Threat Zone) that fall within the broader definition WUI. A WUI Defense Zone is a relatively narrow area in width directly adjoining structures that is converted to a non-flammable state to increase defensible space and firefighter safety. The WUI Threat Zone is an additional strip of vegetation modified to reduce flame heights and radiant heat. The two buffers together are designed to make most structures defensible. Following are the minimum widths for the WUI defense zone by general vegetation type:

Vegetation	Min Width (ft) WUI Defense Zone	Max Width (ft) WUI Defense Zone
Grass	50	100
Chaparral	100	300
Forests	300	1,500

S121: Community protection needs within the wildland urban interface defense zone (WUI defense zone) take precedence over the requirements of other land management plan direction including other standards identified in Part 3 of the plan. If expansion beyond the minimum width is needed due to site-specific conditions, projects will be designed to minimize the additional buffer width.

Aesthetic Management Standards

S7: Design management activities to meet the scenic integrity objectives (SIOs) shown on the scenic integrity objectives map (LMP Map Packet).

S8: Scenic Integrity Objectives will be met with the following exceptions:

- Minor adjustments not to exceed a drop of one SIO allowable with the Forest Supervisor's approval provided the minimum SIO specified for each place will not be exceeded and visual resource improvement measures (rehabilitation, enhancement) will be undertaken in the area to balance the resulting decline in visual quality.
- Temporary drops of more than one SIO level may be made during and immediately following project implementation with Forest Supervisor's approval providing they do not exceed 3 years in duration.

S10: Acquired lands will receive the strategic direction from the overlay of land use zones and designated use zones until a land management plan amendment provides direction.

Fish and Wildlife Standards

When Implementing All Activities

S11: When a species at risk or suitable habitat for a species at risk is present on an ongoing or proposed project site, project documentation shall include reference to applicable habitat or species conservation considerations identified in species accounts (see Appendix H - Species Guidance Summary). This guidance is intended to provide a range of possible conservation measures that may be selectively applied during site-specific planning to avoid, minimize or mitigate negative effects on species at risk. As needed, involve appropriate resource specialists in the identification of relevant design criteria. Include review of species accounts in fire suppression or other emergency actions when and to the extent that it is practicable.

S12: Prior to making decisions to implement project activities within suitable TEPCS habitat, survey for species occupancy for project activities that are likely to adversely affect the species or their habitat using protocols and habitat suitability criteria identified in Appendix C - Species Habitat Suitability and Survey Protocols.

S13: In critical biological land use zones, as identified on forest land use zone maps, allow only uses or activities that will be either beneficial or neutral to the identified species at risk.

S14: Where available, and within the capability of the site, retain a minimum of 6 downed logs per acre and 10-15 hard snags per 5 acres.

S14a: Within riparian conservation areas, retain all snags and downed logs unless they are identified as a threat to life and property.

S14b: In areas outside of primary buffers and fuelbreaks, retain all soft snags unless they are a safety hazard.

S15: Identify and protect the physical and biological values of identified cliffs by maintaining a minimum 1/4 mile buffer during management activities to the extent possible while protecting life and property. A site-specific analysis may allow for smaller buffers.

S16: Protect all spotted owl territories identified in the Statewide Fish and Game database, as well as new sites that meet the state criteria while providing for protection of life and property from wildfire. Use the conservation considerations in the species account to further evaluate protection needs for projects, uses and activities. Where habitat must be taken for a compelling reason, habitat loss should be mitigated on a three to one basis considering number of territories affected, reproductive history, location etc. Mitigation land should be sought first within the mountain range where the impacts occur; if this is not possible, mitigation land should be acquired within the San Gabriel or San Bernardino Mountains. Habitat acquired as mitigation should be threatened with imminent development

S16a: Maintain a limited operating period (LOP) prohibiting activities within approximately ¼ mile of California spotted owl nest sites, or activity centers where nest site is unknown, during the breeding season (February 1 through August 15) unless surveys confirm that the owls are not nesting. The LOP does not apply to existing road

and trail use and maintenance or continuing recreation use, except where analysis of proposed projects or activities suggests that either existing or proposed activities are likely to result in nest disturbance. (See species account for further clarification Appendix H - Species Guidance Summary).

S16b: Within PACs and home range cores, retain 10-15 tons per acre of the largest logs available (Verner et al. 1992). Exception allowed within wildland urban interface defense zones and central zone of shaded fuelbreaks where low fuel volume is needed for firefighter safety and community protection.

S16c: Within PACs and home range cores, retain 4 to 8 of the largest snags available per acre, or at least 20 sq. ft. basal area per acre of snags greater than 15 inches dbh and 20 feet tall (Verner et al. 1992). Exception allowed within wildland urban interface defense zones, wildland urban interface threat zones and shaded fuelbreaks where low fuel volume is needed for firefighter safety and community protection.

S16d: Within PACs and home range cores, design projects to retain all live trees greater than or equal to 24 inches dbh.

S17: Linear structures such as fences, major highways, utility corridors, bridge upgrades or replacements, and canals will be designed and built to allow for wildlife movement across them.

S101: Avoid and minimize impacts of all management activities on TEPCS species.

S102: For key and occupied TEP species habitats, emphasize prevention of undesirable nonnative plant and animal establishment and spread by incorporating education, prevention, inventory, control and eradication, monitoring, and reporting measures in all applicable projects.

S103: Conduct road and trail maintenance activities during the season of year that would have the least impact on TEP wildlife species in key and occupied habitats.

S104: Avoid domestic sheep and goat grazing within 9 miles of bighorn sheep habitat.

S105: Design and implementation of prescribed burns will avoid long-term negative impacts to TEP species.

S106: Close or restrict use in areas within 500 feet of occupied bald eagle wintering habitat and within 330 feet of active nests during breeding season. If direct line-of-sight includes human activity, restrictions may apply up to 1,300 feet based on site-specific analysis.

S107: Provide for protection of California condor nest sites. Avoid disturbance within 1.5 miles of nest sites and 0.5 miles of roost site except as provided by site-specific consultation.

S108: Avoid collection of special forest products where it may negatively affect key or occupied habitat of threatened, endangered, or proposed species, except where appropriate in response to requests from Native Americans.

S109: Land exchanges will have an overall neutral or beneficial effect on threatened, endangered, and proposed species.

S110: Within key and occupied TEP butterfly habitats, avoid activities that result in removal, crushing, burying, or mowing of host plants; may cause long-term damage to habitat (e.g., erosion, rutting); or result in soil compaction around host plants, unless guided differently by a species-specific biological opinion.

S111: Design of any new recreational facilities or expansion of existing facilities will concentrate public use away from TEP species key and occupied habitat.

S112: When species inventories are done, they will be done according to established survey protocols, where such protocols exist.

S113: Avoid new construction of roads and trails or authorization of undesignated roads and trails through TEP species key and occupied habitats, except for haul roads associated with mining activities.

S114: Projects in Special Interest Areas will be designed to either be neutral or move the area towards its desired condition. If it does not, then there is a need to either modify the project proposal, deny the proposal, or complete a project-driven land management plan amendment.

When Implementing Recreation Activities

S18: Where a TEPCS species occurs in a recreation site or area, take steps to avoid or minimize negative impacts

to the TEPCS species and its habitat. Use the least restrictive action that will effectively mitigate adverse impacts to the species and habitat. Refer to Appendix D - Adaptive Mitigation Protocol for Recreation Sites.

S19: Recreation residences that are destroyed or substantially damaged by catastrophic events will require an analysis to determine whether the structure and improvements can be safely occupied in the future and whether rebuilding should be allowed. Criteria for analysis will include, but not be limited to, the following:

- Floodplain location,
- Riparian conservation areas,
- The risk of geologic hazards at or effecting the permit area,
- Safe ingress and egress for emergency, passenger, and official vehicles to the permit site,
- Compliance with all federal, State and county building, health and sanitation codes,
- Compliance with water extraction criteria.

If analysis reveals that the recreation residence cannot be safely occupied or rebuilt, the permit holder shall remove within a reasonable time all structures and improvements from the permit area except those owned by the United States, and shall return the lot to a condition approved by the Forest Supervisor. Vacant, unoccupied lots within existing recreation residence tracts as well as other potential lots will not be identified or offered as in lieu lots unless they meet the above analysis and criteria.

S20: Manage dispersed recreation to ensure environmental sustainability by discouraging camping within 100 feet of sensitive resources and habitats, including meadows and bodies of water (springs, streams, ponds and lakes) or within ¼ mile of developed recreation facilities, private property or federal/State/county highways where practicable. In addition, manage dispersed camping and travel to allow travel on designated roads and trails only, with parking on existing turnouts and road shoulders, and to allow dispersed camping at either designated dispersed/primitive camping areas or yellow posts.

S22: Recreational target shooting will only be allowed in designated areas. Shooters shall remove their targets and spent shells when departing designated shooting areas. No war games or paintball use will be permitted.

When Implementing Fire Management Activities

S23: Design and manage temporary openings and fuelbreaks to avoid or minimize use by off road vehicles.

S24: When containment of the fire and human safety are not compromised, apply fire suppression strategies and tactics that minimize loss or damage to or enhance all TEPCS species habitats. Where feasible, wildfire suppression may follow minimum impact suppression tactics (see Appendix B - Minimum Impact Suppression Tactics (MIST)) when in, or adjacent to, key and occupied TEPCS habitat.

S25: When containment of fire and human safety are not compromised, avoid establishment of staging areas, helibases, base camps, firelines or other areas of human concentration and equipment use within TEP species key and occupied habitats to the maximum extent possible while protecting life and property. Exceptions require coordination between the Forest Supervisor and the incident commander.

S115: Avoid fuel treatments in coastal sage scrub within the range of the California gnatcatcher, except for fire clearance around structures and on fuelbreaks.

When Implementing Livestock Grazing Activities

S100: Allotment specific review of rangeland capability and suitability criteria identified in Appendix J - Livestock Capability and Suitability Criteria shall precede allotment permit reissuance or issuance of new allotment permits as part of project level NEPA. Permits will not be issued for allotments that have insufficient suitable grazing areas to sustain a livestock grazing operation.

S27: In TEPCS species habitat and riparian areas use no more than an estimated 50% of current year's production of perennial grass and grass-like plants and other herbaceous plants; for shrubs, use no more than an estimated 20% of the current year's growth. In upland areas outside of TEPCS species habitat use no more than an estimated 50% of current year's growth of shrubs unless required to meet other vegetation management objectives. Livestock will be moved from grazing units when use standards are met.

When Implementing Lands and Special Uses Activities

S29: Include provisions for raptor safety when issuing permits for power lines and communication sites, within 5 years of issuance except within the range of the California condor which will be incorporated within 1 year.

When Implementing Minerals and Energy Activities

S31: Where abandoned mines or buildings provide habitat for bats with viability concerns, maintain public safety while maintaining bat habitat and use to the extent practicable.

S32: Do not approve new commercial mineral material operations that are likely to impact occupied or critical habitat for federally listed threatened and endangered species, or proposed, candidate or sensitive species habitat.

S33: Require a mining plan of operations under 36 CFR 228.4 for all proposed locatable mining operations that are likely to cause significant surface disturbance to occupied or critical habitat of federally listed threatened and endangered species and habitats of proposed, candidate or sensitive species; perform surface use determination to determine the reasonableness of these plans of operations except those processed under the provisions of the Carbonate Habitat Management Strategy and require all practicable measures to protect these species and their new habitat.

Soil, Water and Riparian Standards

When Implementing All Activities

S34: All construction or reconstruction of tunnels on National Forest System lands shall use construction practices that minimize the adverse effects on National Forest System groundwater aquifers during construction, such as liners and seepage control measures that minimize loss of ground water after completion of tunneling.

S35: Surface water diversions and groundwater extractions, including wells and spring developments, will only be permitted, or re-authorized, when it is demonstrated by the potential user that the water extracted is excess to that needed by other forest resources, and the extraction will not adversely affect aquifers, aquatic resources, riparian resources, or other ecosystem components.

S37: Renewals, modifications and new applications for diversions are permitted, authorized or allowed only when riparian dependent resources are protected.

S38: For ground disturbing activities, implement revegetation prescriptions whenever site-specific analyses conclude that natural rates of revegetation will not be adequate to meet standards and guidelines for ground cover, plant density, and species composition within a reasonable amount of time.

S54: When planning and implementing activities, evaluate geologic hazards and develop mitigations where risks to life, property or resources may be present.

Applicable Within Riparian Conservation Areas

S39: When designing new projects in riparian areas, apply the five-step project screening process for riparian conservation areas as described in Appendix E - 5-step screening process.

S40: For non-hydroelectric surface water development proposals (such as flood control reservoirs and municipal water supplies), require instream flows that maintain or restore riparian dependent resources, favorable channel conditions, and aquatic species habitat.

S41: Require fish passage instream flows where fish passage will enhance or restore native or desired nonnative fish distribution and not cause adverse effects to other native species.

S42: For exempt hydroelectric facilities on National Forest System lands, include provisions in the special use authorization designed to provide for adequate instream flow requirements to maintain, restore, or recover favorable ecological conditions for local riparian and aquatic dependent species.

S43: During re-licensing of hydroelectric projects, seek downstream flows favorable to riparian dependent resources. This includes evaluation of the natural hydrograph, current and historic riparian conditions, and current and historic native species occupancy.

S44: During licensing of new hydroelectric projects, seek downstream flows that fall within the range of historic variability, mimic the unimpeded natural hydrograph including frequency, magnitude, duration, and timing, and are favorable to riparian dependent resources.

S45: For existing ancillary facilities inside riparian areas that are essential to proper management of the instream facilities, provide recommendations to the Federal Energy Regulatory Commission (FERC) to mitigate impacts to riparian conservation areas and aquatic resources. When these objectives cannot be met, provide recommendations to the FERC that such ancillary facilities should be relocated.

Applicable Within Livestock Grazing Areas

S100: Allotment specific review of rangeland capability and suitability criteria identified in Appendix J - Livestock Capability and Suitability Criteria shall precede allotment permit reissuance of new allotment permits as part of project level NEPA. Permits will not be issued for allotments that have insufficient grazing areas to sustain a livestock grazing operation.

S46: Retain the following amounts of average residual dry matter (RDM) until the onset of the rainy season on grazed range lands based on range condition, knowledge of current conditions, and vegetation types. A site-specific analysis and monitoring would establish or revise RDM standards to meet or move towards Forest Plan desired conditions for designated grazing areas. Livestock will be moved from grazing units when use standards are met. Precipitation is average precipitation and not the year's precipitation.

Vegetation Type	Residual Dry Matter (Air dry weight, pounds per acre)
Annual Grasslands	700 and > 10in. precipitation 400 and < 10in. precipitation
Annual Grasslands/Pinyon	400
Oak Woodlands	700 and > 10in. precipitation 400 and < 10in. precipitation
Mixed Conifers	600
Fuelbreaks	600
Chaparral/Desert Scrub	200 to 400

S47: Salt Location: Salt and/or other supplements will be located greater than ¼-mile from all water sources including ponds; riparian areas; meadows; springs; seeps; vernal pools; susceptible TEPCS species and habitat; livestock and wildlife water developments; concentrated and developed recreation areas; and other sensitive areas including heritage resources, unless approved by the responsible forest officer.

S48: Streamside Areas and Natural Lakeshores: Do not exceed 20% alteration of the rooted vegetative and physical structure within the fifty-year high water line area per stream reach and along natural lake shores.

S49: Soil Cover: Within grazing allotments or other designated grazing areas, maintain soil protection with a minimum of 50% ground cover or within site potential.

S50: Burn Areas: A site-specific analysis will be performed within designated livestock areas to determine the level of livestock use, if any. Livestock numbers will not be increased beyond permitted numbers within the first two years.

When Implementing Invasive Species Management Activities

S51: Seed purchased for use on National Forest System lands will be certified to be free of noxious weeds. Seeds not covered under a weed free seed certification will be inspected and determined to be free of weed seed before purchase and use. Only native seed will be used.

S52: Use R5 Weed Handbook weed prevention practices such as washing off-road equipment and vehicles (both Forest Service and contracted) for project implementation and fire suppression.

When Implementing Minerals and Energy Activities

S53: Casual rock, invertebrate fossil, and mineral collecting for non-commercial personal uses may be allowed without permit, for small quantities, subject to the following conditions: a) personal use is generally defined as for small rock gardens or rock collections; b) amounts are generally limited to less than 200 pounds per person, per year, total; c) size of material is generally limited to 12 inch diameter stones; d) no collecting will be allowed within wet stream courses, riparian areas, or Special Designation areas. Exceptions may require NEPA evaluation and/or issuance of a mineral material permit, special use permit or contract of sale.

Wild and Scenic River Standards

S62: Manage designated Wild and Scenic River segments to perpetuate their free-flowing condition and designated classifications and to protect and enhance their outstandingly remarkable values and water quality.

Manage eligible Wild and Scenic River segments to perpetuate their free-flowing condition and proposed classifications, and protect and enhance their outstandingly remarkable values and water quality through the suitability study period and until designated or released from consideration. When management activities are proposed that may compromise the outstandingly remarkable value(s), potential classification, or free-flowing character of an eligible wild and scenic river segment, a suitability study will be completed for that eligible river segment prior to initiating activities.

Cultural and Historic Standards

S63: Until proper evaluation occurs, known heritage resource sites shall be afforded the same consideration and protection as those properties evaluated as eligible to the National Register of Historic Places.

S64: Leave human remains which are not under the jurisdiction of the County Coroner undisturbed unless there is an urgent reason for their disinterment. In case of accidental disturbance of historic or Native American graves, or re-internment of human remains, follow forest, federal and tribal policies.

S65: Authorization for alterations or demolition to improvements associated with forest activities (i.e. special uses, range/grazing, water, administrative infrastructure, etc.) shall not adversely affect significant heritage resources unless treatment options are implemented to reduce the effect.

S66: Protect sensitive and proprietary traditional tribal use areas.

Geographic Place Specific Standards

See place-specific Standards in Part 2 for each forest.

Angeles National Forest

Cleveland National Forest

Los Padres National Forest

San Bernardino National Forest

Other Design Criteria

The land management plan is a single integrated plan. The references found in Appendix A - Laws, Policies and Other Direction have been reviewed to assure consistency with other parts of the plan, and are incorporated by reference. As these design criteria change over time, updates are hereby incorporated by reference.

Appendix B - Minimum Impact Suppression Tactics (MIST) details Minimum Impact Suppression Tactics (MIST) guidelines referenced by management standards.

Appendix C - Species Habitat Suitability and Survey Protocols.

Appendix D - Adaptive Mitigation Protocol for Recreation Sites includes an adaptive mitigation protocol to be used for resolving species conflicts with recreation activities.

Appendix E - Five-Step Screening Process includes Riparian Conservation Area Guidance.

Appendix F - Guidelines for Aerial Application of Retardants and Foams in Aquatic Environments.

Appendix G - DRAFT - Guidelines for Construction, Maintenance and Operation of Mountain Top Communications Sites.

Appendix H - Species Guidance Summary lists species at risk. Conservation considerations for each species are also provided.

Land Adjustment Map and Criteria - A land adjustment map will be maintained and updated to express the desired future condition of the forests and illustrate where acquisition may likely occur. See Criteria in Appendix I - Land Acquisition Criteria.

Monitoring of Design Criteria

Implementation and effectiveness monitoring are conducted at the project level. Annually a sample of projects (at least 10 percent) implemented under the land management plan will be reviewed. A review team will visit selected projects to assist in monitoring the effectiveness of applying plan design criteria. If problems in implementation are detected or if the design criteria are determined to be ineffective then the team will recommend corrective actions. Corrective actions may include land management plan amendment(s) if necessary to improve the effectiveness of the design criteria. Results of this monitoring will be reported annually in the plan monitoring and evaluation report. This monitoring and evaluation is part of the Adaptive Management Cycle.

Appendix A - Laws, Policies and Other Direction

This appendix supplements the Key Laws Providing Direction for Southern California Land Management Plans section found in Part 3 of the land management plan with a list of federal and State statutes, regulations (Code of Federal Regulations or CFR), Executive Orders (EO), and national and regional Forest Service policy relevant to the land management plan.

The list of national and regional policy is partial. A complete listing can be found in the Forest Service Manual (FSM) and Forest Service Handbook (FSH). The Forest Service Directives System is available on the national website, <http://www.fs.fed.us/im/directives>.

Management and Administration

Social and Economic

Twenty-five Percent Fund (1905)

Government Performance and Results Act (1993)

The National Environmental Policy Act (1969)

The National Forest Management Act (1976)

EO 12898 Environmental Justice (1994)

Tribal Relations and Interests

Many of the laws and regulations for heritage also apply to the focus of tribal and Native American programs within the Forest Service.

The **American Indian Religious Freedom Act of 1978** makes it policy for the Federal Government to protect and preserve American Indians' inherent right of freedom to believe, express, and exercise traditional religions of American Indians, Eskimo, Aleut and Native Hawaiians, including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonial and traditional rites. It directs federal agencies to assess their policies and procedures, in consultation with tribes, on ways to ensure this use.

EO 13007 Indian Sacred Sites (May 26, 1996) requires each executive branch agency with statutory or administrative responsibility for the management of federal lands, to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions, to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites. Where appropriate, agencies shall maintain the confidentiality of sacred sites.

EO 13084 Consultation (May 14, 1998) provides direction regarding consultation and coordination with Indian Tribes relative to regulatory policy.

Executive Memorandum for Heads of Executive Departments and Agencies: **Government-to-Government Relations** (April 29, 1994) states that each executive department and agency shall consult with tribal governments prior to taking actions that affect federally recognized tribal governments on a government-to-government basis. All such consultations are to be open and candid so that all interested parties may evaluate for themselves the potential impact of proposals.

American Indian/Alaska Native Policy Statement (USDA Forest Service) promulgates Executive Memorandum of April 29, 1994. It states that the Forest Service will maintain a governmental relationship with federally recognized tribal governments, implement programs and activities honoring Indian treaty rights and

fulfill legally mandated trust responsibilities to the extent they are applicable to National Forest System lands as well as to address and be sensitive to traditional native religious beliefs and practices; and provide research, transfer of technology, and technical assistance to Indian governments.

Memorandum Of Understanding between the San Manuel Band of Mission Indians and USDA - Forest Service, Angeles and San Bernardino National Forests (February 1, 2001).

Agreement between the San Manuel Band of Serrano Mission Indians and the Angeles and San Bernardino National Forests to provide for increased cooperation between the Forests and the tribe in order to develop community opportunities and partnerships in the areas of mutual interests.

Memorandum of Understanding between the Salinan Tribe and USDA Forest Service, Los Padres National Forest 01-MU-11050700-020 (August 11, 2001).

Agreement between the Salinan Tribe and the Los Padres National Forest to continue to enhance their mutually beneficial relationship for including Native American Cultural and Ancestral Concerns as part of the management of the Los Padres National Forest.

Memorandum of Understanding between the Santa Ynez Band of Chumash Indians and USDA Forest Service, Los Padres National Forest 02-CO-11050754-018 (September 5, 2002).

Agreement between the Santa Ynez Band of Chumash Indians and the Los Padres National Forest to continue to enhance their mutually beneficial relationship for including Native American Cultural and Ancestral Concerns as part of the management of the Los Padres National Forest.

FSM 1563 provides the management direction for American Indian Tribe and Alaska Native Relations.

Resource Management

Biological Resources

Wildlife, Fish and Plants

The **Migratory Bird Treaty Act (1918)** controls the taking, killing, possessing, transportation, and importation of migratory birds.

The **Bald and Golden Eagle Protection Act (1940)** provides protection to bald and golden eagles.

The **Sikes Act (1960)** provides for carrying out wildlife and fish conservation programs on federal lands including authority for cooperative State-Federal plans and authority to enter into agreements with States to collect fees to fund the programs identified in those plans.

The **Clean Water Act Amendments of 1977 and 1990**, on maintaining biological diversity, 404 B-1 guidelines.

36 CFR 219.19 directs the Forest Service to maintain habitat for viable populations of existing native and desired nonnative vertebrate species, to select management indicator species, to consult with biologists from other agencies, consider access and dispersal problems of hunting, fishing, and other uses, and evaluate the effects of pest and fire management.

36 CFR 241 Fish and Wildlife.

Departmental Regulation 9500-4 provides USDA policy on wildlife, fish, and plant habitat management pertinent to public lands on 1) National Forest System land, 2) threatened and endangered species and 3) economic losses from plant and animal pests.

FSM 2600 Wildlife, Fish, and Sensitive Plant Habitat Management.

R5 Supplement 2610-96-1 to FSM 2610 outlines the FS Memorandum of Understanding with the California Department of Fish and Game.

R5 Supplement 2200-92-4 to FSM 2200 outlines the "wild free-roaming horses and burros" cooperative agreement between the Forest Service, California Dept. of Food and Agriculture, USDI, and BLM.

Threatened, Endangered, Proposed and Candidate Species

The **Endangered Species Act of 1973**.

FSM 2670 Threatened, Endangered and Sensitive Plants and Animals. **Region 5 Supplement 2600-97-1** discusses the consultation process.

FSM 2672 governs the protection of sensitive species. The Regional Forester identifies sensitive species, requires that management decisions do not result in a trend towards federal listing and loss of viability, and requires that a biological evaluation be prepared for all Forest Service activities to address potential impacts to sensitive species. **R5 Supplement 2600-92-3 to FSM 2672** lists the sensitive species protected by the Regional Forester.

Invasive Species

Lacey Act (1900) as amended 1981.

Animal Damage Control Act (1931)

Federal Seed Act (1939)

Fish and Wildlife Conservation Act of 1960

The **Federal Noxious Weed Act (1974)**, as amended, requires cooperation with State, local and other federal agencies in the application and enforcement of all laws and regulations relating to the management and control of noxious weeds.

Public Rangelands Improvement Act (1978)

Forest and Rangeland Renewable Resources Research Act (1978)

Plant Protection Act (1990)

The **Nonindigenous Aquatic Nuisance Prevention and Control Act (1990)** which was subsequently amended by the **National Invasive Species Act of 1996**.

Federal Insecticide, Fungicide, and Rodenticide Act (1996)

EO 13112, Invasive Species (1999).

40 CFR 1500-1508.

Pulling Together: A National Strategy for Invasive Plant Management (1998).

Pacific Southwest Region Noxious Weed Strategy and Action Plan (2000).

National Guide to Noxious Weed Prevention Practices (2001).

FSM 2080 Noxious Weed Management. **Region 5 Supplement 2000-95-5** details our noxious weed strategy.

Vegetation Management

The **National Forest Management Act (1976)** requires identification of areas suitable and available for timber harvest and determination of the allowable sale quantity (ASQ) from those lands.

The **Healthy Forest Restoration Act (2003)** improves the capacity for conducting hazardous fuels reduction projects aimed at protecting communities, watersheds and certain other at-risk lands from catastrophic wildfire.

FSM 3400 Forest Pest Management and handbook **FSH 3409.11**.

FSM 4500 Integrated Pest Management.

Physical Resources

Air Resources

The **Wilderness Act (1964)** directs the Forest Service to preserve and protect the natural condition of wilderness, including the intrinsic wilderness value of air quality.

The **Clean Air Act amendments of 1977 and 1990.** Areas of the country were designated as Class I, II, and III airsheds for the prevention of significant deterioration purposes. Class I areas include National Parks and wilderness areas designated before 1977 and over 5000 acres in size. Class I provides protection to pristine lands by severely limiting the amount of additional human-caused air pollution that can be added to these areas.

The California Clean Air Act (1998).

Regional Haze Rule (EPA 1999).

The **EPA's Natural Events Policy** includes a provision to prevent an area from being redesignated as "non-attainment" for particulates when high concentrations result from wildfires.

The **EPA's Interim Air Quality Policy on Wildland and Prescribed Fires(1998)** provides guidance on mitigating air pollution impacts caused by wildland and prescribed fires while recognizing the current role of fire in wildlands management.

FSM 2580 Air Resource Management. Class I areas are listed in **Region 5 Supplement 2500-92-5.**

R5 Guidelines For Evaluating Air Pollution Impacts on Class I Wilderness Areas in California (1992).

The Grand Canyon Visibility Transport Commission (GCVTC).

California's Agricultural Burning Guidelines in Title 17 of the California Code of Regulations.

Memorandum of Understanding (MOU) on Prescribed Burning between the California Air Resources Board and the USDA Forest Service, Pacific Southwest Region (2003).

Air Pollution Control District Significance Criteria.

Pertinent Air Pollution Control District Rules:

Air Pollution Control District	Rules
San Diego County	Rule 50 - Visible Emissions Rule 101 - Burning Control
South Coast Air Quality Management District	Rule 401 - Visible Emissions Rule 444 - Open Burning Rule 1186 - PM10 Emissions from Paved and Un-paved Roads, and Livestock Operations Rule 403 - Fugitive Dust
Ventura County	Rule 50 - Opacity Rule 56 - Open Fires
Santa Barbara County	Rule 401 - Agricultural and Prescribed Burning Rule 312 - Open Fires
San Luis Obispo County	Rule 401 - Visible Emissions

	Rule 502 - Agricultural Burning
Monterey Bay Unified	Rule 438 - Open Outdoor Fires Rule 400 - Visible Emissions
San Joaquin Valley Unified	Rule 3160 - Prescribed Burning Fee Rule 4101 - Visible Emissions Rule 4103 - Open Burning Rule 4106 - Prescribed Burning and Hazard Reduction Burning
Antelope Valley Air Quality Management District	Rule 1186 - PM10 Emissions from Paved and Unpaved Roads, and Livestock Operations Rule 401 - Visible Emissions Rule 403 - Fugitive Dust Rule 444 - Open Fires
Mojave Desert Air Quality Management District	Rule 208 - Permit for Open Burning Rule 401 - Visible Emissions Rule 403 - Fugitive Dust Rule 444 - Open Fires

Soil Resources

The **Forest and Rangeland Renewable Resources Planning Act (RPA)(1974)**, as amended by the **National Forest Management Act (1976)**, gives direction to "...recognize the fundamental need to protect and, where appropriate, improve the quality of soil, water and air resources."

The National Forest Management Act minimum management requirement states, "Conserve soil and water resources and not allow significant or permanent impairment of the productivity of the land."

Soil and Water Resources Conservation Act (1977).

USDA Forest Service, Pacific Southwest Region letter 2350-5 of November 8, 2002. Standards and Guidelines for Mechanized OHV Trail Work.

FSM 2550 Soils.

FSH 2509.18 Soil Management Handbook. **Region 5 Supplement 2509.18-95-1** establishes regional soil quality standards.

Water Resources

The **Organic Administration Act (1897)**.

The **Clean Water Act, a series of Acts from 1948 to 1987**.

The **Safe Drinking Water Act of 1974** as amended (1986, 1996) requires federal agencies having jurisdiction over any federally owned or maintained public water system to comply with all authorities respecting the provision of safe drinking water. The State of California has primary enforcement responsibility through its drinking water regulations.

The **National Forest Management Act of 1976** directs National Forests to protect watershed conditions from irreversible damage and to protect streams and wetlands from detrimental impacts.

Executive Orders 11988 Floodplain Management (1977) and **11990 Protection of Wetlands (1977)** direct federal agencies to avoid to the extent possible the impacts associated with the destruction or modification of floodplains and wetlands. Agencies are directed to avoid construction and development in flood plains and wetlands whenever there are any feasible alternatives.

Executive Order 12088 Federal Compliance with Pollution Control Standards (1978). Revoked in part by **EO 13148 Greening the Government Through Leadership in Environmental Management (2000)**.

EO 12113 Independent Water Project Review.

36 CFR 323 Permits for Discharges of Dredged or Fill Material into Waters of the United States.

Water Quality Management for Forest System Lands in California - Best Management Practices Handbook (USDA Forest Service, Pacific Southwest Region, September 2000) provides standards that must be followed.

FSM 2500. Watershed and Air Management. Region 5 Supplement 2500-92-4 to FSM 2540 gives guidance on water uses and developments. Region 5 Supplement 2500-92-2 to FSM 2526 discusses riparian area management.

Forest Service Handbook 2509.18 Soil Management Handbook.

Watershed Conservation Practices Handbook (FSH - Forest Supplement 2509.25)

Geologic Resources and Hazards

The **Organic Administration Act of 1897** established the National Forests, and the specific uses thereof and initial regulations. The law authorizes the use of National Forest System lands to qualified parties for collection of vertebrate and invertebrate fossil resources.

Archeological Protection Act of 1979 authorizes the use and protection of National Forest System lands for paleontological resources associated with archeological resources. The Act allows collection of rocks, minerals and fossils for non-commercial use without a permit.

The **Federal Cave Resources Protection Act of 1988** requires the Secretary of Agriculture to consider significant caves in the preparation of any land management plan and keep the locations of significant caves confidential unless it is determined that disclosure will not create a risk of harm, theft, or destruction to cave resources.

36 CFR 251, Subpart B provides direction for managing special uses including paleontological resources.

36 CFR 261, Subpart A defines paleontological resources and describes prohibited activities.

Water Quality Management for Forest System Lands in California - Best Management Practices Handbook (USDA Forest Service, Pacific Southwest Region, September 2000) provides standards.

FSM 2800 Geology.

Special Designations

Wilderness

The **Wilderness Act of 1964** established a National Wilderness Preservation System to be administered in such a manner as to leave these areas unimpaired for future use and enjoyment as wilderness.

Ventana Wilderness Act of 1969.

Endangered American Wilderness Act of 1978.

California Wilderness Act of 1984.

Los Padres Condor Range and River Protection Act of 1992.

California Desert Protection Act of 1994.

Big Sur Wilderness Additions Act of 2002.

The **Alaska National Interest Lands Conservation Act of 1980** directs the Secretary of Agriculture to provide adequate access to non-federal land within the boundaries of the National Forest System including Congressionally designated areas.

36 CFR 293 Wilderness and Primitive Areas.

36 CFR Part 294, the Roadless Area Conservation Rule, establishes prohibitions on road construction, road reconstruction, and timber harvesting in inventoried roadless areas on National Forest System lands.

36 CFR 219.17(a) states that: "... roadless areas within the National Forest System shall be evaluated and considered for recommendation as potential Wilderness during the forest planning process."

Congressional Grazing Guidelines (Sec. 108, P.L. 96-560, H.R. Report 96-617 dated 11/14/79) clarify the Congressional intent that livestock grazing will be permitted to continue in National Forest wilderness areas, when such grazing was established prior to classification of an area as wilderness. This policy is reiterated in **FSM 2323.22**.

FSM 2320 Wilderness. **Region 5 Supplement 2300-94-1** allows mineral information gathering in wilderness areas only for scientific or educational purposes; a written authorization is required. **Region 5 Supplement 2300-92-2** prohibits competitive events in wilderness areas under order No. 83-1.

FSH 1909.12.7.1 directs National Forests to: "... identify and inventory all roadless, undeveloped areas that satisfy the definition of Wilderness found in section 2 (c) of the 1964 Wilderness Act." **FSH 1909.12.7** also details the means by which the capability, availability, and need for potential wilderness areas is assessed.

Wild and Scenic Rivers

The **Wild and Scenic Rivers Act of 1968** establishes objectives, goals, and procedures for designation of wild, scenic, and recreational rivers, making it national policy to "preserve selected rivers or sections thereof in their free-flowing condition, to protect water quality of such rivers and to fulfill other vital national conservation measures.

36 CFR 297 Wild and Scenic Rivers.

Interagency National Wild and Scenic Rivers System: Final Revised Guidelines for Eligibility (1982) (USDA and USDI) provides additional guidance to agencies on how to consider Wild and Scenic Rivers eligibility, suggesting that Wild and Scenic rivers be considered during forest planning.

FSM 2354 Wild and Scenic Rivers.

FSH 1909.12 directs the Forest Service to evaluate rivers for inclusion in the National Wild and Scenic River System during the forest planning process.

Research Natural Areas

36 CFR 219.25 states that forest planning shall provide for the establishment of Research Natural Areas. To be identified are examples of important forest, shrubland, grassland, alpine, aquatic, and geologic types that have special or unique characteristics of scientific interest and importance and that are needed to complete the national Research Natural Area network.

FSM 4060 provides specific direction concerning establishment and management of Research Natural Areas.

National Strategy of July 19, 1993.

Region 5 policy on fire suppression in Research Natural Areas.

Special Interest Areas

36 CFR 292 National Recreation Areas.

36 CFR 294.1 states that if under 100,000 acres, a Regional Forester may designate certain suitable areas other than wilderness or wild areas, which should be managed principally for recreation use.

FSM 2360 provides specific direction concerning establishment and management of Special Interest Areas. Forest planning may be one means for establishment.

FSM 2370 discusses special recreation designations.

FSM 2372 provides specific direction concerning establishment and management of Special Interest Areas. Forest planning may be one means for establishment.

National Monuments

Santa Rosa and San Jacinto Mountains National Monument Act (2000).

Experimental Forests

Forest and Rangeland Renewable Resource Research Act of 1978.

FSM 4060 Experimental Forests and Ranges.

Lands Management

The **Transfer Act (1905)** transferred the forest reserves to the Department of Agriculture.

The **Weeks Act (1911)** provides for land acquisition, exchange, condemnation and rights of way easements. Land acquired by the United States under this act are reserved and not subject to appropriation under mineral law except as provided by the Secretary of Agriculture.

The **General Exchange Act (1922)** authorizes land adjustments within National Forest boundaries.

Clarke-McNary Act (1924) authorized cooperative agreements with the states and expanded on the Weeks Act land purchase authority.

Land Acquisition (1925).

The **Color of Title Act (1928)** authorizes the Secretary of Agriculture to recognize an adverse possession of public land under claim or color of title based on designated conditions.

The **Land Acquisition - Declaration of Taking Act (1931)** provides condemnation authority to the United States.

Receipts Act of 1938 (52 Stat. 699), as amended in 1944 (58 Stat. 46).

Receipts Act of 1940 (54 Stat. 299 and 54 Stat. 297).

Land Acquisition - Title Adjustment (1943).

The **Organic Act (1956)** provides additional land purchase authority.

The **Land and Water Conservation Fund Act (1964)** provides for funds for the acquisition of land and interests in land.

National Forest Roads and Trails Act (1964).

The **Sisk Act (1967)** provides for the exchange of land with States and local governments.

Federal Land Policy and Management Act (1976).

Acceptance of Gifts Act (1978) This Act authorizes Forest Service acceptance of cash, as well as donations of real personal property.

The **Small Tracts Act (1983)** provides for the sale, exchange or interchange of certain parcels of minimal size.

Educational Land Grant Act (2000) provides for conveyance of National Forest System lands for educational

purposes.

36 CFR 254 Landownership Adjustments.

FSM 5400 Lands.

Heritage Resources

The **Antiquities Act (1906)**, as implemented by the Uniform Rules and Regulations, has the purpose of protecting any historic or prehistoric ruin or monument, or any object of antiquity on Federal lands. It authorizes the President to designate historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest as national monuments; regulates public archaeological activities; and provides penalties for people who damage these sites and ruins. Includes both heritage resources and paleontological resources.

Historic Sites, Buildings, Objects and Antiquities Act (1935).

Reservoir Salvage Act (1960).

National Historic Preservation Act (1966) as amended through 1992 (and as implemented by **36 CFR 800 #** Protection of Historic and Cultural Properties).

National Environmental Policy Act (1969).

Archaeological and Historic Preservation Act (1974), as amended.

The **Archaeological Resources Protection Act (1979)**, as amended (as implemented by **36 CFR 296 #** Protection of Archaeological Resources), secures the protection of archaeological resources and sites on public and Indian lands and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community and private individuals having access to and information related to these resources. It provides civil and criminal penalties for the unauthorized excavation, removal, damage, alteration, or defacement of archaeological resources.

Native American Graves Protection and Repatriation Act of 1990 (as implemented by **43 CFR 10 #** Native American Graves Protection and Repatriation Act Regulations) directs the recovery, treatment, and repatriation of human remains, sacred objects, and objects of cultural patrimony to appropriate Tribes. It also calls for consultation with tribes to develop procedures for use in the event that human remains are discovered either by intentional excavation or inadvertent discovery.

Religious Freedom Restoration Act (1993).

EO 11593 Protection and Enhancement of Cultural Environment (1971) states that the Federal Government shall provide leadership in preserving, restoring and maintaining the historic and cultural environment of the Nation, and that federal agencies shall administer the cultural properties under their control in a spirit of stewardship and trusteeship for future generations; initiate measures necessary to direct their policies, plans and programs in such a way that federally owned sites, structures, and objects of historical, architectural or archaeological significance are preserved, restored and maintained for the inspiration and benefit of the people; and, in consultation with the Advisory Council on Historic Preservation, institute procedures to assure that federal plans and programs contribute to the preservation and enhancement of non-federally owned sites, structures and objects of historical, architectural or archaeological significance.

EO 13287 Preserve America (2003) states that it is the policy of the Federal Government to provide leadership in preserving America's heritage by actively advancing the protection, enhancement, and contemporary use of the historic properties owned by the Federal Government, and by promoting intergovernmental cooperation and partnerships for the preservation and use of historic properties. The Federal Government shall recognize and manage the historic properties in its ownership as assets that can support department and agency missions while contributing to the vitality and economic well-being of the Nation's communities and fostering a broader appreciation for the development of the United States and its underlying values.

36 CFR 219.24 states that forest planning shall provide for the identification, protection, interpretation, and management of significant cultural resources on National Forest System lands.

Programmatic Agreement Among the U.S.D.A. Forest Service, Pacific South-west Region, the California State

Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation (ACHP) Regarding the Process for Compliance with Section 106 of the National Historic Preservation Act for Undertakings on the National Forests of the Pacific Southwest Region (1996, amended 2001) simplifies the case-by-case consultation requirements for "no effect" findings under Section 106 of the National Historic Preservation Act of 1966 (NHPA) (36 CFR 800). By eliminating some of the burdensome and redundant requirements, more resources should be available for achieving greater compliance with the broader historic preservation goals found in Section 110 of the NHPA.

The Secretary of the Interior provides published standards and guidelines for Archaeology and Historic Preservation including Professional Qualifications. Regulations are also provided for the National Register of Historic Places (36 CFR 60) Determinations of Eligibility for Inclusion in the National Register of Historic Places (36 CFR 63), National Historic Landmarks Program (36 CFR 65), Secretary of the Interior's Standards for Rehabilitation (36 CFR 67), Secretary of the Interior's Standards for the Treatment of Historic Properties (36 CFR 68), Rehabilitation (36 CFR 67), and Curation of Federally Owned Archaeological Collections (36 CFR 79).

FSM 2360 Heritage Resources.

Public Use and Enjoyment

Recreation

Granger-Thye Act (1950) authorizes special-use permits for the use of structures or improvements under the administrative control of the Forest Service and for the use of land in connection therewith.

The **Multiple-Use Sustained-Yield Act (1960)** adds outdoor recreation as a use for which National Forests were established.

The **Land and Water Conservation Fund Act (1964)** provides continuing access to National Forests and funding for recreation, and defines admission and recreation fee collection guidelines.

The **Architectural Barriers Act (1968)** establishes that buildings, facilities and vehicles meet standards suitable for persons with disabilities.

The **National Trails System Act (1968)** establishes that trails be provided to meet increasing recreation needs.

Volunteers in the National Forest Act of 1972 authorizes Forest Service acceptance of an individual's services without compensation, other than perhaps for incidental expenses

The **Forest and Rangeland Renewable Resource Act (1974)** includes recreation among resources for which forest planning is required.

The **Americans with Disabilities Act (1990)** provides additional standards so that disabled persons will not be discriminated against and have opportunities for access and use of facilities.

EO 12862 Setting Customer Service Standards.

36 CFR 291 Occupancy and Use of Developed Sites and Areas of Concentrated Public Use.

36 CFR 261 Prohibitions.

FSM 2300 Recreation.

Landscape Management

Wilderness Act of 1964.

Wild and Scenic Rivers Act of 1968.

The **National Environmental Policy Act (1969)** states that it is the continuing responsibility of the federal government to use all practicable means to assure for all Americans, aesthetically and culturally pleasing

surroundings.

Federal Land Policy and Management Act (1976) states that it is the policy of the United States to manage public lands in a manner that will protect the quality of scenic, ecological, and environmental values.

Landscape Aesthetics Handbook, U.S. Forest Service Agriculture Handbook No. 701, 1995. This handbook replaced the Visual Management System, Agriculture Handbook No. 462.

The **Scenery Management System (SMS)** presents a vocabulary for managing scenery and a systematic approach for determining the relative value and importance of scenery on National Forest land.

The **Visual Management System, U.S. Forest Service Agriculture Handbook No. 462.** This publication provided direction under which landscape management for the current forest plans were developed.

Law Enforcement

The **Organic Administration Act (16 USC 472, 551)** directs the Secretary of Agriculture to execute, or cause to be executed, all laws affecting the National Forest System. It authorizes the Secretary to make rules and regulations to preserve the National Forest and to regulate their occupancy and use, and establishes penalties for violating those rules and regulations.

7 CFR 2.7 and 2.60 delegates these authorities to the Chief of the Forest Service.

16 USC 559 authorizes Forest Officers to make arrests for violations of Federal laws and regulations relating to the National Forest System.

FSM 5300 Law Enforcement.

Facilities Operations and Maintenance

Administrative Infrastructure

The **Americans with Disabilities Act (1990)** establishes additional requirements to ensure that buildings and facilities are accessible, in terms of architecture and design, transportation, and communication, to individuals with disabilities.

FSM 7300 Facilities. **R5 Supplement 7300-92-1** to FSM 7310 discusses buildings and related facilities.

FSM 7400 Public Health and Pollution Control Facilities and Region 5 Supplements.

Roads and Trails

Forest Highways Act (1958).

National Forest Roads and Trails Act (1964) provides the principal authorities for financing forest road construction and maintenance.

Land and Water Conservation Fund (1964).

National Historic Preservation Act (1966); 36 CFR 800.

The National Trails System Act (1968) established procedures for the official designation of national scenic trails.

Architectural Barriers Act (1968) as amended through 1984.

Rehabilitation Act of 1973, as amended 1974, 1986, 1992, 1993.

Office of Federal Procurement Policy Act (1974).

Federal Land Policy and Management Act (1976).

National Energy Conservation Policy Act (1978).

Surface Transportation Assistance Act (1978).

Americans with Disabilities Act (1990).

Intermodal Surface Transportation Efficiency Act of 1991.

Energy Policy Act (1992).

EO 11644 (1972) and EO 11989 (1977) Off-Road Vehicles on Public Lands establishes direction for the management of off-road vehicle use and provides for closing areas to off-road vehicles where resources would, or are, being negatively impacted.

EO 12512 Federal Real Property Management (1985).

EO 12902 Energy Efficiency and Water Conservation at Federal Facilities(1994).

EO 12699, Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction (1993).

23 CFR 1230 makes the **Highway Safety Act of 1966** applicable to all federal agencies that control roads.

29 CFR 1910 Occupational Safety and Health Standards and **29 CFR 1960** Basic Program Elements for Federal Employee Occupational Safety and Health Programs.

36 CFR 212 provides the principle regulations for administration of the forest development transportation system.

36 CFR 251 Land Uses.

36 CFR 261.13 establishes prohibitions for vehicle use off roads.

36 CFR 261.54 establishes prohibitions for vehicle use of National Forest System roads for safety purposes.

36 CFR 261.55 establishes prohibitions for vehicle use on National Forest System trails for safety purposes.

36 CFR 261.56 establishes prohibition for vehicle use off National Forest System roads for resource protection purposes.

36 CFR 295 establishes direction for the management and monitoring of off-road vehicle use on National Forest System land.

49 CFR 1.48 Delegations to Federal Highway Administrator.

Forest Order No. 88-4, Pacific Crest National Scenic Trail, Pacific Southwest Region, Pacific Northwest Region, Intermountain Region, August 1988.

The National Forest System Road Management and Transportation System; Final Rule and Policy, approved January 12, 2001, provides direction for a road system that is safe, responsive to public needs, environmentally sound, and affordable and efficient to manage. The purpose is to help ensure that additions to the National Forest System network of roads are those deemed essential for resource management and use; that construction, reconstruction, and maintenance of roads minimize adverse environmental impact; and that unneeded roads are decommissioned and restored.

The Roadless Area Conservation Rule, January 12, 2001, prohibits road construction and reconstruction in inventoried roadless areas on National Forest System lands, unless certain exceptions are met.

Roads Analysis: Informing Decisions About Managing the National Forest Transportation System (USDA Forest Service 1999), is an integrated ecological, social and economic approach to transportation planning based on science that provides a process to analyze existing and future road needs and management.

Memorandum of Understanding between Federal Highway Administration and the Forest Service (10/17/75) identifies those safety standards that are applicable to the Forest Service. Amendment #1 (11/16/82) defines roads open to public travel and passable by four-wheel standard passenger cars.

Memorandum of Understanding between USDA Forest Service, USDI National Park Service, USDI Bureau of Land Management, California State Parks, and the Pacific Crest Trail Association, draft June 2003.

Comprehensive Plan for the Pacific Crest National Scenic Trail, January 1982.

FSM 2350 Trail, River, and Similar Recreation Opportunities.

USDA Forest Service Trail Accessibility Guidelines, March 2003 (Draft).

USDA Standard Specifications for Construction and Maintenance of Trails, September 1996.

FSH 2309.18 Trails Management Handbook.

FSM 7700 Transportation Systems. **Region 5 Supplement 7700-93-1 to FSM 7720** gives direction on transportation design.

Commodity and Commercial Uses

Special Forest Products

36 CFR 223 Sale and disposal of National Forest System timber.

FSM 2460 Uses of Timber Other Than Commercial Timber Sales.

Special Uses

American Antiquities Act (1906).

Occupancy Permits Act (1915).

Mineral Leasing Act (1920).

Granger-Thye Act (1950).

Act of September 3, 1954, Permits for Public Buildings and Other Public Works.

National Forest Roads and Trails Act (1964).

National Historic Preservation Act (1966).

The Federal Land Management and Policy Act (FLMPA)(1976) provides authority for the majority of non-recreation special use authorizations on National Forest System lands.

The **Ditch Bill (1976)** amended FLPMA to provide for free, non-expiring easements for certain qualifying agriculture-type water facilities.

American Indian Religious Freedom Act (1978).

Archaeological Resource Protection Act (1979).

The **Alaska National Interest Lands Conservation Act (1980)** gives direction for providing access to non-federally owned land within the boundaries of the Forest.

The **National Forest Ski Area Permit Act (1986)** allows the Forest Service to issue special use permits to the private sector to construct and operate ski areas on an unlimited number of acres of NFS land for a period of up to 40 years.

Telecommunication Act (1996).

Act of May 26, 2000 **Photographic Activities on Federal Lands (PL106-206).**

36 CFR 251 (Land Uses) streamlines the process for obtaining special use authorizations.

36 CFR 261 Prohibitions.

FSM 2700 Special Use Administration and Region 5 and San Bernardino Supplements.

FSH 2709.11 Special Use Administration Handbook and Supplements.

FSH 7509.11 and **Region 5 Supplement 7500-94-2** to FSM 7510 give direction on the management of dams.

New MOU between USDI Bureau of Land Management (BLM) and U.S. Fish and Wildlife Service and USDA Forest Service. Application of Endangered Species Act to proposals for access to nonfederal lands administered by BLM and the Forest Service. Signed 01/30/2003.

Livestock Grazing

The **Granger-Thye Act (1950)** provides for the issuance of grazing up for up to 10 years. It also provides for the use of grazing receipts for range improvement work.

The **Wilderness Act (1964)** provides that livestock grazing, and the activities and facilities needed to support it, are allowed to continue in wilderness when such grazing was established before designation.

Wild Horses and Burros Protection Act (1971).

The **Public Rangelands Improvement Act (1978)** recognizes the need to correct unsatisfactory conditions on public rangelands by increasing funding for maintenance and management of these lands.

The **Rescission Bill (1995)** directs the Forest Service to complete site-specific NEPA analyses and decisions on allotments on a scheduled basis.

36 CFR 222 Range Management.

36 CFR 219.3 provides detailed definitions and terminology of capability and suitability.

FSM 2200 Range Management.

Minerals

The **General Mining Law (1872)** allows prospecting and development of valuable minerals on public lands. This includes locating various types of claims, assessment work required, and patenting under specific circumstances.

The **Organic Administration Act (1897)** established the national forests, and the specific uses thereof and initial regulations. It extended the right to conduct mining activities under the General Mining Law of 1872 if in compliance with rules and regulations covering National Forest System land.

The **Mineral Leasing Act (1920)** authorizes the Secretary of the Interior to lease various minerals on land administered by the government, including National Forests and grasslands. This act also gives the conditions of leases, and the procedures under which leasing occurs.

The **Mineral Materials Act (1947)** gives the Secretary of the Interior the authority to dispose of mineral materials (common variety minerals) by sale or free use.

Multiple Use Mining Act (1955) requires the disposal of common varieties of sand, gravel, stone, and other mineral materials under provisions of the Mineral Materials Act of 1947.

The **Wilderness Act (1964)** withdrew wilderness areas from all forms of appropriation and disposition under the mining and mineral laws.

Mining and Minerals Policy Act (1970) states that the continuing policy of the federal government is to foster and encourage private enterprise in the development of economically sound and stable domestic mining and minerals industries and the orderly and economic development of domestic mineral resources.

Geothermal Steam Act of 1970.

36 CFR Part 228, Subpart A describes how locatable mineral activity will be managed on lands open to operations under the General Mining Law of 1872.

36 CFR Part 228, Subpart C describes how the Forest Service will manage salable minerals.

FSM 2800 Minerals. WO Amendments, Region 5 Supplements.

Oil and Gas Leasing

The **Energy Security Act (1980)** directs the Secretary of Agriculture to process applications for leases and permits to explore, drill, and develop resources on National Forest System lands, notwithstanding the current status of any management plan being prepared.

The **Federal Onshore Oil And Gas Leasing Reform Act (1987)** expands the authority of the Secretary of Agriculture in the management of oil and gas resources on National Forest System (NFS) lands. Without the Forest Service's approval, the BLM cannot issue leases for oil and gas on NFS lands. The Forest Service must also approve all surface-disturbing activities on NFS lands before operations commence.

National Energy Plan, May 2001.

36 CFR Parts 228 and 261 (1990) are the regulations and procedures to implement the 1987 Reform Act. These regulations establish a staged decision process designed to accommodate the nature of oil and gas exploration and development.

Fire and Aviation Management

Fire and Fuels Management

The **Organic Administration Act (1897)** authorizes the Secretary of Agriculture to make provisions for the protection of National Forests against destruction by fire.

The **Bankhead-Jones Farm Tenant Act (1937)** authorizes and directs the Secretary of Agriculture to develop a program of land conservation and land utilization to protect the public lands.

The **Wilderness Act (1964)** authorizes the Secretary of Agriculture to take such measures as may be necessary in the control of fire within designated wilderness.

The **National Forest Management Act (1976)** directs the Secretary of Agriculture to specify guidelines for land management plans to ensure protection of forest resources.

The **Clean Air Act (1977)** provides for the protection and enhancement of the nation's air resources.

The **Federal Wildland Fire Policy (1995, 1998, and reviewed in 2001)** outlines policies on fire suppression and integrating fire on the landscape. The policy is being integrated into **FSM 5100**.

The **National Fire Plan (2000)** provides guidance and direction for firefighting, restoration and rehabilitation of burned lands, hazardous fuels reduction, and community assistance.

California State Fire Law is applicable to facilities on National Forest System lands.

FSM 5100 Fire and Fuels and Region 5 Supplements .

Appendix B - Minimum Impact Suppression Tactics (MIST)

Fuel Management

- Hot-line/Ground Fuels
- Allow fire to burn to natural barriers.
- Use cold-trail, wet line or combination when appropriate.
- If constructed fire line is necessary, use only width and depth to check fire spread.
- Constantly re-check cold trailed fire line.
- Hot-line/Aerial Fuels
- Limb vegetation adjacent to fire line only as needed to prevent additional fire spread.
- During fire line construction, cut shrubs or small trees only when necessary. Make all cuts flush with the ground.
- Minimize felling of trees and snags unless they threaten the fire line or seriously endanger workers. In lieu of felling, identify hazard trees with a lookout or flagging.
- Scrape around tree bases near fire line if it is likely they will ignite.

Mop up/Ground Fuels

- Do minimal spading; restrict spading to hot areas near fire line.
- Cold-trail charred logs near fire line; do minimal tool scarring.
- Minimize bucking of logs near fire line or to check for hot spots; roll the logs instead if possible.
- Return logs to original position after checking and when ground is cool.
- Refrain from making bone yards; burned and partially burned fuels that were moved should be returned to a natural arrangement.
- Consider allowing large logs to burnout. Use a lever rather than bucking to manage large logs which must be extinguished.
- Use gravity socks in stream sources and/or a combination of water blivits and fold-a-tanks to minimize impacts to streams.
- Consider using infrared detection devices along perimeter to reduce risk.

Mop up/Aerial Fuels

- Remove or limb only those fuels which if ignited have potential to spread fire outside the fire line.
- Before felling consider allowing ignited tree/snag to burn itself out. Ensure adequate safety measures are communicated if this option is chosen.
- Identify hazard trees with a lookout or flagging.
- Align saw cuts to minimize visual impacts from more heavily traveled corridors. Slope cut away from line of sight where possible.

Logistics

- **Campsite Considerations**
- Locate facilities outside of wilderness whenever possible.
- Coordinate with the Resource Advisor in choosing a site with most reasonable qualities of resource protection and safety concerns.
- Evaluate short-term low impact camps such as cyote or spike versus use of longer-term higher impact camps.
- New site locations should be on impact resistant and naturally draining areas such as rocky or sandy soils, or openings.
- Avoid camps in meadows, along streams or on lakeshores. Locate at least 200 feet from lakes, streams, trails, or other sensitive areas.
- Consider impacts on both present and future users. An agency commitment to wilderness values will promote those values to the public.
- Lay out the camp components carefully from the start. Define cooking, sleeping, latrine, and water supply.
- Minimize the number of trails and ensure adequate marking.
- In NFS wilderness use brief relief portable toilet system.
- Do not use nails in trees.
- Constantly evaluate the impacts which will occur, both short and long term.
- **Personal Camp Conduct**
- Use "leave no trace" camping techniques.
- Minimize disturbance to land when preparing bedding site. Do not clear vegetation or trench to create bedding sites.
- Use stoves for cooking, when possible. If aw campfire is used, limit to one site and keep it as small as reasonable. Build either a "pit" or "mound" type fire. Avoid use of rocks to ring fires.
- Use down and dead firewood. Use small diameter wood, which burns down more cleanly.
- Don't burn plastics or luminum- "pack it out" with other garbage.
- Select travel routes between camp and fire and define clearly.
- Carry water and bathe away from lakes and streams. Personnel must not introduce soaps, shampoos or other personal grooming chemicals into waterways.

Aviation Management

- One of the goals of wilderness managers is to minimize the disturbance caused by air operations during an incident.

Aviation use Guidelines

- Maximize back haul flights as much as possible.
- Use long line remote hook in lieu of constructed helispots for delivery or retrieval of supplies and gear. (Promote the use of llamas.)
- Take precautions to insure noxious weeds are not inadvertently spread through the deployment of cargo nets and other external loads.
- Use natural openings for helispots and paracargo landing zones as far as practical. If construction is necessary, avoid high visitor use areas.

- Consider maintenance of existing helispots over creating new sites.
- Obtain specific instructions for appropriate helispot construction prior to the commencement of any ground work.
- Consider directional falling of trees and snags so they will be in a natural appearing arrangement.
- Buck and limb only what is necessary to achieve safe/practical operating space in and around the landing pad area.

Retardant Use

- During initial attack, fire managers must weigh the non-use of retardant with the probability of initial attack crews being able to successfully control or contain a wildfire. If it is determined that use of retardant may prevent a larger, more damaging wildfire, then the manager might consider retardant use even in sensitive areas. This decision must take into account all values at risk and the consequences of larger firefighting forces' impact on the land.
- Consider impacts of water drops versus use of foam/retardant. If foam/retardant is deemed necessary consider use of foam before retardant use.

Hazardous Materials

Flammable/Combustible Liquids

- Store and dispense aircraft and equipment fuels in accordance with National Fire Protection Association (NFPA) and Health and Safety Handbook requirements.
- Avoid spilling or leakage of oil or fuel, from sources such as portable pumps, into water sources or soils.
- Store any liquid petroleum gas (propane) downhill and downwind from fire camps and away from ignition sources.

Flammable Solids

- Pick up residual fuses debris from the fire line and dispose of properly.
- Fire Retardant/Foaming Agents
- Do not drop retardant or other suppressants near surface waters.
- Use caution when operating pumps or engines with foaming agents to avoid contamination of water sources.

Appendix C - Species Habitat Suitability and Survey Protocols

Acanthomintha ilicifolia

Suitable Habitat Criteria and Survey Requirements

Acanthomintha ilicifolia (A.Gray) A. Gray

San Diego Thornmint

September 2002

Corrected draft modeled habitat for *Acanthomintha ilicifolia* is based on GIS parameters: San Diego County only; Soil types from CNF soils coverage - Auld series plus areas where Auld series is in contact with Las Posas series - (Las Posas that is within 500 meters of Auld soils), and Las Posas soils that are 30% slope or less (using DEM model to get slope).

Original model was: San Diego County only; Soil types from CNF soils coverage - Auld series plus areas where Auld series is in contact with Las Posas series - (Las Posas that is within 500 meters of Auld soils), and Las Posas soils that are 25% slope or less (need to use DEM model to get slope), and buffer soils by 90 meters. *Original modeled habitat was as above, but erroneously included La Posta series soils, used soil classification (vs. DEMs) as basis for selecting areas with 30% slope or less, and buffered soils by 90 meters.*

Suitable Habitat

The site must meet the following criteria:

Site lacks a dense shrub canopy (site is grassland or opening in shrubland matrix. Shrub cover generally absent, but scattered shrubs may be present).

Soil type at the site is heavy clay and is subject to shrinking and swelling.

The presence of cryptogamic crusts also indicates potentially suitable habitat. In addition, the following plant species often co-occur with San Diego Thornmint: Palmer's Grapplinghook (*Harpegonella palmeri*), Chocolate Lily (*Fritillaria biflora*). Cracks in the soil layer may be evident when soil is not saturated.

Habitat assessment

Can occur at any time throughout the year. Aerial photo analysis may be used to exclude areas containing dense shrub canopies.

Protocols for surveys of Suitable Habitat - Presence/Absence Determination

Detectability Profile: Annual variation in detectability is high. Flowers in April to June (usually May at known reference populations). Seed set occurs by July. In years when germination levels are high, the aerial portion of last year's plants is often visible; skeletonized thorny tracts may allow identification of this species while it is dormant. Detectability is usually highest in years with above-average rainfall.

Survey Requirements for Negative Determinations in Suitable Habitat

Repeat Requirements: Because this species has high annual variability in presence, and it is highly detectable during the flowering period, a negative determination (absence finding) may be rendered after two years of surveys during which the species is detected flowering at a reference population. Surveys will be conducted according to the following stipulations:

One or more members of the field survey crew shall visit at least one of the known occurrences of San Diego Thornmint at Viejas or Poser Mountains prior to initiating surveys to verify that precipitation has been adequate to stimulate the germination and establishment of San Diego Thornmint and to determine its phenology and detectability. Surveys shall be postponed if San Diego Thornmint is not detected at known sites or if the plants are inconspicuous due to poor growth. Plants will be considered inconspicuous if more than 50 percent of the individuals detected within an occurrence have less than 4 leaves.

Survey Intensity: Surveys should be conducted during the flowering season (see above). Survey for San Diego Thornmint shall be conducted by walking parallel transects spaced 1-2 meters apart throughout the entire target area. Extra attention should be given to ephemeral stream courses within the area of suitable habitat.

References:

- Abrams, L. 1951. Illustrated Flora of the Pacific States, Vol.III. Stanford Univ. Press, Stanford, CA.
- Bauder, E. T. and J. Sakrison. 1997. Autoecology of San Diego Thornmint. Report for California Dept. of Fish and Game. Unpublished report, CDFG files.
- Betts, Breck. 1992. Botanical Special Interest Area Evaluation Report, a cost-share project with Cleveland National Forest. Unpublished report, CNF files.
- USFWS. 1998. Endangered and threatened wildlife and plants: Determination of endangered or threatened status for four plants from southwestern California and Baja California, Mexico. Federal Register 63(197):54938-54956.
- Winter, K. 1992. Species Management Guide for *Acanthomintha ilicifolia*. Unpubl. report, CNF files.

Allium munzii

Suitable Habitat Criteria and Survey Requirements for

Allium munzii (Traub) D. McNeal

Munz's Onion

September 2002

Modeled habitat for *Allium munzii* is based on GIS parameters: Trabuco Ranger District (CNF) only; soil types from CNF soils coverage -- Bosanko, Altamont, and Alo that are less than 15% slope; and buffer soils by 90 meters.

Suitable Habitat

The site must meet the following criteria:

Site lacks a dense shrub canopy. Site is grassland or opening in shrubland matrix. Shrub cover generally absent, but scattered shrubs may be present.

Soil type at the site is heavy clay and is subject to shrinking and swelling.

The presence of cryptogamic crusts also indicates potentially suitable habitat. In addition, the following plant species often co-occur with Munz's Onion: Palmer's Grapplinghook (*Harpogonella palmeri*), Chocolate Lily (*Fritillaria biflora*), *Allium haematochiton*, *Dudleya multicaulis*, *Microseris douglasii* ssp. *Platycarphy*, *Chorizanthe ploygonoides* var. *longispina*, and *Plantago erecta*. Cracks in the soil layer are sometimes evident.

Habitat assessment

Can occur at any time throughout the year. Aerial photo analysis may be used to exclude areas containing dense shrub canopies.

Note: All modeled habitat (31 acres) for this species has been surveyed with no new occurrences.

Botanical surveys, which included a focused search for Munz's onion, were also conducted in 1991 by the Cleveland National Forest (Boyd and Mistretta 1991) and extensive floristic surveys of the Agua Tibia Wilderness

on the Palomar RD were conducted in the 1990s by Rancho Santa Ana Botanic Garden (Banks 1999).

The above soil types are present only on the Trabuco RD.

Protocol for Surveys of Suitable Habitat - Presence/Absence Determinations

Detectability Profile: Annual variation in detectability is high. Flowers in April - May, seed set by July. In years when germination levels are high, the aerial portion of last year's plants is often visible and identifiable through June. Detectability is usually highest in years with above-average rainfall and within recently burned areas where annual grass cover is reduced.

Survey Requirements for Negative Determinations in Suitable Habitat

Repeat Requirements: Because this species has high annual variability in presence but it is highly detectable during the flowering period, a negative determination (absence finding) may be rendered after one year of survey during which the species is detected flowering in abundance at a reference populations.

Survey only if the plants at a reference location are highly detectable.

Survey Intensity: Surveys for Munz's Onion shall be conducted during the flowering season (see above). Surveys shall be conducted by walking parallel transects spaced 3-4 meters apart throughout the entire target area.

References:

Banks, D. 1999. A vascular flora of the Agua Tibia Mountains. Rancho Santa Ana Botanic Garden.

Boyd, S. and O. Mistretta. 1991. A Survey of the Cleveland National Forest for Munz's Onion (*Allium munzii*). Unpublished report, 6 pp. Supervisors Office files, Cleveland National Forest.

Cleveland National Forest botanical field survey records on file at supervisors office.

Munz, P.A. 1974. A Flora of Southern California. University of California Press, Berkeley, CA

Arenaria paludicola

This species has a very specific and local habitat requirement that is found in on private lands within the plan area. No occupied or modeled habitat is found on National Forest System land. This species probably does not occur on National Forest System land.

Arenaria ursina

Draft

Suitable Habitat Criteria and Survey Requirements for

Arenaria ursina Robinson (Caryophyllaceae)

Bear Valley Sandwort

September 2002

Modeled habitat for *Arenaria ursina* is based on known San Bernardino Mountains pebble plain distribution plus a 1/8 mile buffer.

Suitable Habitat

Suitable habitat is limited to pebble plains in openings within pinyon and juniper woodland, Jeffrey pine forest, and mixed conifer forest. Pebble plains are generally found on ridgetops and gentle slopes and flats (USDA Forest Service 2000).

Pebble plains are determined using a point system, where characteristics indicative of pebble plains are given a point value, depending on the reliability of the indicator (USDA Forest Service 2002). A pebble plain is present when at least four points are achieved. Any combination of the following criteria adding up to four points must be met:

Strong Indicators (2 points each: often occur on pebble plains, rarely occur off of pebble plains)

Clay soils with open canopy
Presence of *Eriogonum kennedyi* var. *kennedyi*
Presence of *Eriogonum kennedyi* var. *austromontanum*
Presence of *Arenaria ursina*
Presence of *Ivesia argyrocoma*

Weak Indicators (1 point each: often occur on pebble plains, frequently occur off of pebble plains)

Presence of *Allium parryi*
Presence of *Antennaria dimorpha*
Presence of *Arabis parishii*
Presence of *Astragalus purshii* var. *lectulus*
Presence of *Castilleja cinerea*
Presence of *Dudleya abramsii* ssp. *affinis*
Presence of *Echinocereus engelmannii*
Presence of *Erigeron aphanactis* var. *congestus*
Presence of *Eriogonum wrightii* var. *subscaposum*
Presence of *Lewisia rediviva*
Presence of *Lomatium nevadense* var. *parishii*
Presence of *Mimulus purpureus*

Protocol for Surveys of Suitable Habitat -- Presence/Absence Determinations

Detectability Profile:

Arenaria ursina plants are moderately detectable when flowering. Flowering has been documented from June through September (Munz 1974), but flowering is often strongly associated with summer rainfall. Plants are diminutive woody short-lived perennials and exhibit low to moderate annual variability in distribution.

Survey Requirements for Negative Determination in Suitable Habitat

Repeat Requirements:

Because this species generally has low to moderate annual variability and is moderately detectable during peak survey months, a negative determination (absence finding) may be made in a single survey season. However, because rainfall affects detectability of *Arenaria ursina*, a representative reference population must be visited prior to survey to confirm detectability during the survey period. If detectability at the reference population is found to be low, one additional survey season will be required for a negative determination.

One survey will be completed at a time when high detectability is confirmed at a reference population, and one follow-up survey will be completed 4-6 weeks later, to account for phenological variability. This will provide sufficient repeat confidence for a negative determination.

Survey Intensity:

Suitable habitat must be surveyed in walking transects no more than two meters apart.

References:

Krantz, T.P. 1981. A survey of two pavement plain endemics: the Bear Valley sandwort, *Arenaria ursina*, and Big Bear Buckwheat, *Eriogonum kennedyi* var. *austromontanum*. A study of the taxa throughout their ranges. Unpublished report prepared for the San Bernardino National Forest on file at the Big Bear Ranger Station, Fawnskin, Ca.

Munz, P.A. 1974. A Flora of Southern California. University of California Press, Berkeley and Los Angeles, Ca.

USDA Forest Service. 1999. Biological Assessment on the effects of ongoing Forest activities that may adversely affect federally Threatened pebble plain plants on the San Bernardino National Forest. Unpublished report on file at the Forest Supervisor's Office, San Bernardino, Ca, and the Big Bear Ranger Station, Fawnskin, Ca.

USDA Forest Service. 2000. Criteria for Modeled Suitable Habitat - Threatened and Endangered Species: *Arenaria ursina*. Draft Unpublished document on file at the Big Bear Ranger Station, Fawnskin, Ca.

USDA Forest Service. 2002. Pebble Plain Habitat Management Guide. Unpublished report on file at the Big Bear Ranger Station, Fawnskin, Ca.

Astragalus albens

Draft

Suitable Habitat Criteria and Survey Requirements for

Astragalus albens E. Greene

(Fabaceae)

Cushenbury Oxytheca

November 2002

Modeled habitat for *Astragalus albens* is based on the Carbonate Habitat Management Strategy (CHMS) *Astragalus albens* (ASAL) layer of known occurrences and includes the following GIS parameters: Elevation: 3,200 ft # 7,000 ft; Slope: gentle, 5 # 30%; Vegetation types: PJCE, PJYUC/PYPUYUC, PJBBS, PJBBS/PYBBS, PYPUYUC, BBS; Geology: PBM, PBL, PZF. San Bernardino Mountains.

Suitable Habitat

The site must be in the San Bernardino Mountains or adjacent desert areas and meet both of the following criteria:

1. Carbonate soils or carbonate outcroppings are present.
2. Vegetation structure is relatively open; soil surface is visible.

Astragalus albens is endemic to the north slope of the San Bernardino Mountains from the east side of Dry Canyon southeast to the head of Lone Valley. The taxon may be found on carbonate substrates, outwash plains, alluvial fans, or bajadas (USDA Forest Service 2000). One occurrence has also been found on colluvial granitic soil (Furnace Canyon) (White 1999). *Astragalus albens* often co-occurs with *Erigeron parishii* and *Eriogonum ovalifolium* var. *vineum*.

Protocol for Surveys of Suitable Habitat - Presence/Absence Determinations

Detectability Profile: *Astragalus albens* plants are short-lived perennials and exhibit moderate variability in detectability from year to year. When flowering, detectability is high. However, seed production and germination are variable in response to climate, and detectability is often low during low rainfall years. Detectability is low to moderate within two months of flowering and low to none otherwise. Flowering occurs from late March to mid-June (MacKay 2002).

Survey Requirements for Negative Determinations in Suitable Habitat

Repeat Requirements: Because this species is a short-lived perennial, has moderate annual variability, and is highly detectable during peak survey months, a negative determination (absence finding) may be made in two survey seasons. Additional survey seasons may be necessary if plants are not found following low rainfall years. During the first two survey seasons, a reference population must be visited prior to survey to confirm high detectability during the survey period. If detectability at the reference population is found to be low, one additional survey season (with high detectability confirmed at the reference site) will be required for a negative determination.

For each year, one survey will be completed at a time when high detectability is confirmed at a reference

population, and one follow-up survey will be completed 4-6 weeks later, to account for phenological variability. This will provide sufficient repeat confidence for a negative determination.

Survey Intensity: Suitable habitat must be surveyed in walking transects no more than two meters apart.

References:

MacKay, P. 2002. West Mojave Plan species account for Cushenbury Milkvetch (*Astragalus albens*). Unpublished report on file at the Big Bear Ranger Station, Fawnskin, Ca.

Olson, T.G. 2002. Carbonate Habitat Management Strategy. Draft unpublished report Prepared for the San Bernardino National Forest Association. On file at the Big Bear Ranger Station, Fawnskin, Ca.

USDA Forest Service. 2000. Criteria for Modeled Suitable Habitat - Threatened and Endangered Species: *Astragalus albens*. Draft unpublished document on file at the Big Bear Ranger Station, Fawnskin, Ca.

USDA Forest Service. 2001. Carbonate Species Suitable Habitat Models. Unpublished report on file at the Big Bear Ranger Station, Fawnskin, Ca.

White, S. 1999. Letter to San Bernardino National Forest, dated 11/24/99. Scott White Biological Consulting.

Astragalus brauntonii

Suitable Habitat Criteria and Survey Requirements for

Astragalus brauntonii Parish (Fabaceae)

Braunton's milkvetch

September 2002

Modeled habitat for *Astragalus brauntonii* is based on GIS parameters:

1. Vegetation (Franklin-CalVeg): CA (chamise chaparral), CQ (northern mixed chaparral), and SS (Sage Scrub). Also QA (coast live oak woodland), but only for the Transverse Range (ANF).
2. Elevation: Maximum = 2,300 feet (701 m). No minimum applied.
3. Geographic area: Angelus NF (without Saugus Dist), Front Country District of the San Bernardino NF, and the Trabuco District of the Cleveland NF. This geographic area was buffered by one mile, extending the modeled habitat screen 1 mile off National Forest System Lands. The geographic area was further limited in the Transverse Range: the eastern limit of eco-region M262Bd (San Gabriel Mountains) = the eastern limit of the modeled habitat screen. This line roughly corresponds with the San Andreas Fault rift zone. The geographic area was further limited in the Santa Ana Mountains: trans-montane areas were excluded from the modeled habitat screen.
4. Geology was further limited in the Santa Ana Mountains (Trabuco RD) to include only the following three geology types: Ku, Ep, Oc, which correspond with the geology of known occurrences in the Santa Ana Mountains.

Suitable Habitat

The site must meet the following criteria:

Existing vegetation coverage is generally within chaparral, sage scrub, closed-cone conifer forest or oak types, and possibly adjacent to alluvial fan sage scrub. Associated species may include *Adenostoma fasciculatum*, *Artemisia californica*, *Cupressus forbsii*, *Eriogonum fasciculatum*, *Lotus scoparius*, *Malosma laurina*, *Rhus ovata*, *Salvia mellifera*, and/or *Sambucus mexicana*. Associated species also include early successional plants such as *Helianthus* spp., *Penstemon spectabilis*, *Solanum* spp, etc.

Parent geology is granitic, gneiss, or limestone.

Protocol for Surveys of Suitable Habitat - Presence/Absence Determinations

Detectability Profile: Plants are typically only detectable within a few years following some form of disturbance

to the seed bank (e.g., landslides), or in areas that are maintained open artificially (i.e. fire roads, fuelbreaks, etc.). In such areas, plants are highly detectable while in flower, and otherwise moderately detectable. Flowering period is generally March-June, varying with seasonal rainfall amount and timing. *Astragalus brauntonii* plants are perennial, and persist in the same locations for several years in areas where natural vegetation recovery eventually crowds out the plants. Following this recovery, the occupied habitat persists only in the form of seed bank until the next suitable disturbance. Where disturbance is chronic or short-periodic (e.g. road shoulders), occurrences may persist indefinitely. Plants tend to flower annually, even in dry years (although less so in very dry years).

Survey Requirements for Negative Determinations in Suitable Habitat

Repeat Requirements:

Chronically disturbed sites: Because this species has low annual variability in presence on roadsides and similar surfaces, and it is highly detectable during the flowering period, a negative determination (absence finding) may be made in a single survey season. However, because the species exhibits annual variation in the timing of the flowering period, a representative reference population must be visited to confirm high detectability during the survey period. One complete survey at a time when high detectability is confirmed at a reference site will provide sufficient repeat confidence for a negative determination.

Other sites meeting the above habitat suitability criteria: Because this species is generally not detectable in its habitat except for the years following fire or other disturbance, negative determinations can only be made during the years following such disturbances. Habitat must be surveyed annually for 3 years post-disturbance during the flowering period, as determined by visiting a suitable reference population. One complete survey for each of these three years, at times when high detectability is confirmed at a reference site, will provide sufficient repeat confidence for a negative determination.

Survey Intensity: During the flowering season suitable habitat may be surveyed in transects up to 10 meters apart (or for roads and other linear disturbances, walk each shoulder/edge).

References:

California Natural Diversity Data Base (CNDDB) 2000. Vers. 2.1.2. Cal. Dept. of Fish & Game.

Hickman, James C., ed. 1993. The Jepson Manual, Higher Plants of California. University of California Press, Berkeley.

Jennings, Charles W. and Rudolph G. Strand. 1969. Los Angeles Sheet. Geologic Map of California, Olaf P. Jenkins Edition. Cal. Div. of Mines and Geology, San Francisco.

Munz, Philip A. 1974. A Flora of Southern California. UC Press, Berkeley.

Skinner, Mark. 1991. Rare plants of California: Braunton's milkvetch. *Fremontia* 19(3): 6-7.

Tibor, David P., ed. 2001. Inventory of Rare and Endangered Plants of California, 6th edition. California Native Plant Society, Sacramento, CA.

USFWS. 1999. Recovery Plan for Six Plants from the Mountains Surrounding the Los Angeles Basin. USDI, Fish and Wildlife Service, Region 1, Portland, Oregon.

Astragalus lentiginosus coachellae

Small amount of modeled habitat on National Forest System land. When environmental conditions are appropriate all modeled habitat will be surveyed.

Astragalus tricarinatus

Small amount of modeled habitat on National Forest System land. When environmental conditions are appropriate all modeled habitat will be surveyed.

Baccharis vanessae

Suitable Habitat Criteria and Survey Requirements for

Baccharis vanessae Beauch.

Encinitas Baccharis

September 2002

Modeled habitat for *Baccharis vanessae* is based on GIS parameters: Cleveland National Forest only, within subsections 261Bi (Coastal Hills) and 261Bj (Coastal Terraces of the 1994 USDA Forest Service Ecological Units of California Map. The eastern boundary of each subsection was buffered 3 miles to maintain the distance from the coast to Mt. Woodson. The elevation ranged from 200-2,100 feet. Soils used were Alo, Cieneba, Corralitos and Exchequer series.

There was an error in model development. The FS planned to use 2500' for the upper elevation and 2100' was used. FS will "correct" model to extend up to 2500'.

Suitable Habitat

The site must meet the following criteria:

Soils are derived from either metavolcanic, gabbro or sandstone parent material.

Associated species may include Sticky Dudleya (*Dudleya viscida*). Associated vegetation is usually southern maritime chaparral (off-forest locations) and southern mixed chaparral.

Habitat assessments

Can occur at any time throughout the year.

Note: CNPS has elevation range of 60 # 720 meters. The model incorporated ecoregions and soils that did include a small amount of modeled habitat near El Capitan Reservoir on the Descanso RD. The draft model was modified to include the Mt. Woodson population approximately 6 miles from NFS lands. The final GIS layer (habitat screen) did not include Mt. Woodson because it was clipped to a 1 mile buffer outside the Forest Boundary. Sent by: Cory Ferguson, 08/19/2002.

Protocol for Surveys of Suitable Habitat - Presence/Absence Determinations

Detectability Profile: This species is a shrub and is highly detectable year-round. Flowers in July to November.

Survey Requirements for Negative Determinations in Suitable Habitat

Repeat Requirements: Because this species has low annual variability in presence, and it is highly detectable year-round, a negative determination (absence finding) may be rendered after one year of survey during which the species is detected at a reference population.

Possible reference locations include Oakcrest Park in Encinitas and Mt. Israel Reservoir west of Lake Hodges.

Survey Intensity: Surveys may be conducted year round. During the flowering season surveys for Encinitas Baccharis shall be conducted by walking parallel transects spaced 25 meters apart throughout the entire target area. Outside of the flowering season, surveys for Encinitas Baccharis shall be conducted by walking parallel transects spaced 3 meters apart.

References:

Beauchamp, R.M. 1986. A Flora of San Diego County. Sweetwater River Press, National City, CA 241 pp.

Hickman, J.C. 1993. The Jepson Manual: Higher Plants of California. University of California Press, Berkeley and Los Angeles, CA. 1400 pp.

USDI, FWS, 1996. Endangered and threatened wildlife and plants: Determination of endangered or threatened status for four southern maritime chaparral plants from coastal southern California and northwestern Baja

California, Mexico. Federal Register 61(195): 52370-52384.

California Native Plant Society 6th Inventory of Rare Plants Online Edition. Record for *Baccharis vanessae*.

Berberis nevinii

Draft

Suitable Habitat Criteria and Survey Requirements for

Berberis nevinii A. Gray (Berberidaceae)

Nevin's barberry

October 2002

Modeled habitat for is based on Vegetation (Franklin CalVeg): Soft Chaparral (SCH) life form class (includes sage scrub (SS) and buckwheat/white sage scrub (SB)), and Chaparral (CHP) life form class (includes chamise chaparral (CA), ceanothus chaparral (CC), southern mixed chaparral (CD), northern mixed chaparral (CQ), red shanks (CR), scrub oak (CS), Tucker desert scrub (CT), montane mixed chaparral (CX), and semidesert chaparral (CZ)). In addition, coast live oak woodland (QA) and riparian hardwood (QY) were included.

Geographical Area: Ecoregion M262B (all sub-regions except a and b). Limited to National Forest System Lands, plus a 1 mile buffer. The cismontane portion of the Santa Ana Mountains was excluded from the model (too mesic w/in modeled area).

Geology: Add to model all quaternary alluvial surface types (Qw, Qal, Qc, Qco, Qf, Qo, Qod, Qof, Qow, Qya, and Qyf).

Elevation: 900-2800 feet.

Suitable Habitat

An area will be identified as suitable habitat if it is within the cismontane foothills of the transverse and peninsular ranges, within the general geographic range of modeled habitat, and meets both of the following criteria

Site is within chaparral, sage scrub, or oak vegetation types.

Site occurs along a canyon bottom or wash characterized by alluvial soils originating with granitic or non-marine sedimentary geology; or on slopes adjacent to such surfaces.

Site is within 500 meters of the canyon bottom.

From 1800 # 3,000 feet (the lower edge of marine layer), consisting of relatively flat (low relief) clay lenses with higher water-holding capacity; consisting of heavy adobe/gabbro type soils derived from metavolcanic geology.

Below 1800 feet. Metasedimentary substrates associated with springs or seeps buffered 30 m (contour).

Below 1800 feet. Sedimentary units like Temecula arkose, especially sandy arkose material, on slopes up to 15 m (contour) added SJA above drainage bottoms.

Below 1800 feet. In broad alluvial scrub in washes/canyon bottoms, within 20 m (contour) added SJA of canyon bottom, in alluvial soils originating from primarily nonmarine sedimentary substrates.

Associated species may include *Artemisia californica*, *Ceanothus*, *Eriogonum fasciculatum*, *Heteromeles arbutifolia*, *Marah macrocarpus*, *Platanus racemosa*, *Prunus ilicifolia*, *Quercus* spp., *Rhamnus crocea*, *Ribes aureum*, or *Sambucus mexicana*, or *Malacothamnus davidsonii*.

Protocol for Surveys of Suitable Habitat # Presence/Absence Determinations

Detectability Profile: Annual variability is low and shrub is highly detectable when blooming (generally, March-April but sometimes as early as January), but not readily detectable when vegetative. Detectability may be decreased, during flowering, in areas containing *Ribes aureum*, which has closely related flower phenology and a

similar yellow flower.

Plants are cane shrubs, often large, occur in the same locations year to year, and exhibit very low variability in presence between years. Plants will generally flower annually even in dry years, although timing and duration of flowering period will vary with climate.

Actual detectability should be assessed in the field using reference populations, and should be used instead of the above generalized detectability profile in determining repeat requirements.

Survey Requirements for Negative Determination in Suitable Habitat

Repeat Requirements: Because this species has low annual variability in presence, and it is highly detectable during the flowering period, a negative determination (absence finding) may be made in a single survey season. However, because the species exhibits annual variation in the timing of the flowering period, a representative reference population must be visited to confirm high detectability during the survey period. If detectability is found to be low, one additional survey season with low or better detectability (re-confirmed at the reference site) will be required to determine absence.

One complete survey at a time when high detectability is confirmed at a reference population will provide sufficient repeat confidence for a negative determination. Where two seasons are required because of low detectability during the first season, each season will consist of a complete survey during the confirmed flowering period.

Survey Intensity: Where detectability has been confirmed to be high, suitable habitat may be surveyed in transects up to 50 meters apart, using binoculars to search for flowering shrubs. Areas not visible between transects must be approached, such that all suitable habitat surveyed is visually scanned. If *Berberis* co-occurs with *Ribes aureum* conduct surveys in 25 meter transects.

Where detectability is low (based on reference populations), suitable habitat must be surveyed in walking transects no more than 20 meters apart; otherwise as above.

References:

- California Natural Diversity Data Base (CNDDB). 2000. Version 2.1.2. California Department of Fish and Game.
- Hickman, James C., ed. 1993. The Jepson Manual, Higher Plants of California. University of California Press, Berkeley.
- Jennings, Charles W. and Rudolph G. Strand. 1969. Los Angeles Sheet. Geologic Map of California, Olaf P. Jenkins Edition. California Division of Mines and Geology, San Francisco.
- Munz, Philip A. 1974. A Flora of Southern California. University of California Press, Berkeley.
- Rogers, Thomas H. 1967. San Bernardino Sheet. Geologic Map of California, Olaf P. Jenkins Edition. California Division of Mines and Geology, San Francisco.
- Ryan, Thomas M. 1981. Soil Survey of Angeles National Forest Area, California. USDA Forest Service, Pacific Southwest Region and Soil Conservation Service in cooperation with The Regents of University of California (Agricultural Experiment Station).
- Soza, Valerie and Steve Boyd. 2000. Surveys and monitoring for *Berberis nevinii* (Berberidaceae) on the Angeles National Forest. Submitted to William J. Brown, Jr., USDA Forest Service, Angeles National Forest, Arcadia, CA.
- Tibor, David P., ed. 2001. Inventory of Rare and Endangered Plants of California, 6th edition. California Native Plant Society, Sacramento, CA.
- Personal Communication
- Soza, Valerie. 2003. January e-mail regarding questions on *Berberis* habitat.

Brodiaea filifolia

Draft

Suitable Habitat Criteria and Survey Requirements for

Brodiaea filifolia S. Watson (Liliaceae)

Thread-leaved brodiaea

October 2002

Modeled habitat for is based on Riverside, San Bernardino, Angeles, San Diego, Orange Counties only. Soil types: from CNF soils coverage -Las Posas series - for Angeles and San Bernardino, use Diablo Clay/Carlsbad gravelly loamy sand, saline-alkaline Grangeville fine sandy loam, alkaline sink and vernal pool, Waukena loam/Domino silt-loam, Las Flores loamy sand. Where using soils, buffer by 90m. ANF: use maps of Miocene volcanic rock from RSA report. Elevation: 100-2900 feet. Associated vegetation - grassland, chamise chaparral, saltbush scrub, alkali sink scrub, alkali playa, Diegan sage scrub. Slope - less than 20%.

Suitable Habitat:

An area will be identified as suitable habitat if it is within the cismontane foothills of the transverse and peninsular ranges, within the general geographic range of modeled habitat, and meets all of the following criteria:

Site lacks a closed shrub canopy.

Habitat is vernal pools, grasslands, coastal sage scrub, or disturbed soil with weedy plant species. (Swinney 1991)

Soils are Diablo and Altamont clays, Los Flores loamy fine sand, or alkaline silty-clay. (CDFG 1981, Bramlet 1993).

Area may be rich in geophytes, and associated species may be present (*e.g. Allium* spp., *Bloomeria crocea*, *Calochortus* spp., *Dichelostemma capitatum* var. *pulchellum*, *Gnaphalium* ssp., *Deinandra fasciculata*, *Malacothrix saxatilis* ssp. *tenuifolia*, *Melica imperfecta*, *Nassella lepida*, *N. pulchra*, *Opuntia* spp., *Sisyrinchium bellum*, *Brodiaea orcuttii*, and *Brodiaea terestris* ssp. *kernensis*).

Protocol for Surveys of Suitable Habitat - Presence/Absence Determinations

Detectability Profile: Annual variability is very high from year to year, with only a small fraction of a population expressing aboveground and flowering in any given year. Detectability of plants is high when in flower (generally, mid-May to mid-June), and otherwise low to zero.

Plants are perennial from bulbs, and while plants and populations occur in the same locations year to year, above-ground expression is highly variable. Relatively fewer plants in any given occurrence flower in dry years, although typically at least some plants in a given occurrence will flower even in dry years.

Actual detectability should be assessed in the field using reference populations, and should be used instead of the above generalized detectability profile in determining repeat requirements.

Survey Requirements for Negative Determination in Suitable Habitat

Repeat Requirements: Because this species has high annual variability in above-ground expression, some plants in any occurrence would be expected to flower in any given year, and flowering plants are highly detectable, a negative determination (absence finding) may be made in one survey season. However, because the species exhibits annual variation in the timing of the flowering period, a representative reference population must be visited to confirm high detectability during the survey period. If detectability is found to be low, one additional survey season with low or better detectability (re-confirmed at the reference site) will be required to infer absence. One complete survey at a time when high detectability is confirmed at a reference population, and one complete follow-up survey with 4 weeks, will provide sufficient repeat confidence for a negative determination.

Where two seasons are required because of low detectability during the first season, each season will consist of a complete survey during the confirmed flowering period, and a complete follow-up survey.

Note: Hybrids between *Brodiaea filifolia* and *B. orcuttii* are relatively common in parts of the range of *Brodiaea filifolia* (USDI 1998). Findings of hybrids will be recorded and reported.

Survey Intensity: Suitable habitat must be surveyed in transects no more than 5 meters apart.

References:

- Bramlet, D. 1993. Plant Species of Special Concern in the Alkaline Sinks of the San Jacinto River and the Old Salt Creek Tributary Area. Unpublished.
- California Department of Fish and Game. 1981. *Brodiaea filifolia*, California State Endangered Plant Program. Unpublished report.
- California Natural Diversity Data Base (CNDDB). 2000. Version 2.1.2. California Department of Fish and Game.
- Hickman, James C., ed. 1993. The Jepson Manual, Higher Plants of California. University of California Press, Berkeley.
- Munz, Philip A. 1974. A Flora of Southern California. University of California Press, Berkeley.
- Rogers, Thomas H. 1967. San Bernardino Sheet. Geologic Map of California, Olaf P. Jenkins Edition. California Division of Mines and Geology, San Francisco.
- Soza, Valerie and Steve Boyd. 2001. Floristic survey of model plant habitat for federally-listed plant species within the Morgan Fire area, Angeles National Forest. Submitted to William J. Brown, Jr., USDA Forest Service, Angeles National Forest, Arcadia, CA.
- Soza, Valerie and Steve Boyd. 2000. Surveys of potential habitat areas for *Brodiaea filifolia* (Liliaceae) on the Angeles National Forest. Submitted to William J. Brown, Jr., USDA Forest Service, Angeles National Forest, Arcadia, CA.
- Soza, Valerie and Steve Boyd. 1999. Surveys for *Brodiaea filifolia*, Angeles National Forest. Submitted to William J. Brown, Jr., USDA Forest Service, Angeles National Forest, Arcadia, CA.
- Swinney, D. 1991. Glendora's *Brodiaea filifolia*, past-present-future. Community Services Department, Glendora, California.
- Tibor, David P., ed. 2001. Inventory of Rare and Endangered Plants of California, 6th edition. California Native Plant Society, Sacramento, CA.
- USDI #FWS. 1998. Endangered and threatened wildlife and plants: Determination of endangered or threatened status for four southwestern California plants from vernal wetlands and clay soils. Federal Register 63(197):54975-54994.

Castilleja cinerea

Draft

Suitable Habitat Criteria and Survey Requirements for

Castilleja cinerea Gray (Scrophulariaceae)

Ash-Gray Paintbrush

September 2002

Modeled habitat for *Castilleja cinerea* is based on GIS parameters: Elevation: 6500-10200 feet; Slope: 0-30% slope + 120 meter buffer to capture where plant occurrences spread out onto steeper slopes; Franklin GIS vegetation layer for SBNF (BA, JP, EP, MP, MF, BS, PJ, HG vegetation types). Low conifer density or openings. San Bernardino Mountains. Rock types: Elq, JKgr, Jhd, KJqm, Qal, Ql, Qls, Qo, Qod, TRmz, pElb, pElb-Q, pElq.

Suitable Habitat:

The site must be in the eastern transverse range and meet either of the following criteria:

Either of the following host plants are present: *Eriogonum kennedyi* or *Eriogonum wrightii* var. *subscaposum*.

Artemisia nova or *Artemisia ludoviciana* are present, with dry sandy or silty soils, adjacent to or

within meadow systems.

In addition to the host plants listed above, any of the following species may be associated with *Castilleja cinerea*: *Ivesia argyrocoma*, *Arabis parishii*, *Arenaria ursina*, *Lomatium nevadense* var. *parishii*, *Linanthus killipii*, *Lewisia rediviva*, *Mimulus purpureus*, *Antennaria dimorpha*, *Elymus elymoides*. Of these, *Ivesia argyrocoma* is the best plant indicator of suitable habitat.

Protocol for Surveys of Suitable Habitat # Presence/Absence Determinations

Detectability Profile: *Castilleja cinerea* plants are perennial but exhibit high annual variability in detectability. Plants are highly detectable just prior to flowering and remain visible until the first winter snow event. Detectability is low or zero during the rest of the year. While plants are highly detectable in average or above-average rainfall years, detectability may be low to zero in very dry years.

Survey Requirements for Negative Determination in Suitable Habitat

Repeat Requirements: Although this species exhibits high annual variability, plants are highly detectable following average or above-average wet season. For this reason, a negative determination (absence finding) may be made in a single survey season. However, a representative reference population must be visited prior to survey to confirm high detectability during the survey period. If detectability at the reference population is found to be low, a negative determination cannot be made that year.

One survey will be completed at a time when high detectability is confirmed at a reference population, and one follow-up survey will be completed 4-6 weeks later, to account for phenological variability. This will provide sufficient repeat confidence for a negative determination.

Survey Intensity: Suitable habitat must be surveyed in walking transects no more than two meters apart.

References:

- Munz, P.A. 1974. A Flora of Southern California. University of California Press, Berkeley and Los Angeles, Ca.
- USDA Forest Service. 1999. Biological Assessment on the effects of ongoing Forest activities that may adversely affect federally Threatened pebble plain plants on the San Bernardino National Forest. Unpublished report on file at the Forest Supervisor's Office, San Bernardino, Ca, and the Big Bear Ranger Station, Fawnskin, Ca.
- USDA Forest Service. 2000. Criteria for Modeled Suitable Habitat # Threatened and Endangered Species: *Castilleja cinerea*. Draft Unpublished document on file at the Big Bear Ranger Station, Fawnskin, Ca.
- USDA Forest Service. 2002. Pebble Plain Habitat Management Guide. Unpublished report on file at the Big Bear Ranger Station, Fawnskin, Ca.

Caulanthus californicus

Draft

Suitable Habitat Criteria and Survey Requirements

Caulanthus californicus(Wats.) Pays.

California jewelflower

August 2002

Modeled habitat for *Caulanthus californicus* is based on GIS parameters. These mapped areas (**161 acres**) are considered potential habitat within Southern Los Padres Ranges where: Soil map unit = Los Robles # Trigo Family # Orthents Association (map unit 24) or Orthents # Fluvents Complex (map unit 38) and Elevation < 3,200 feet and Slope < 30 percent and Vegetation is in grassland [vegetation map unit 2 or CalVeg series annual grass/forb(HG) and Precipitation is less than 14 inches. California jewelflower has not been found on NFS land. However, the Santa Barbara Canyon metapopulation is located within 3 miles of NFS land.

Suitable Habitat

An area will be identified as suitable habitat only if it is occupied by California jewelflower. The rationale for such a narrow definition of suitable habitat is thus: both GIS modeling (Map sccs_hab_caca21_6) and the application of the description of suitable habitat as shown in the paragraph below result in the widespread delineation of suitable habitat, yet many hours of survey effort covering hundreds of acres of such habitat has so far failed to detect any California jewelflower on NFS land (Magney 1988, Danielson et al. 1994). If California jewelflower is detected on NFS land it may be that the following description of habitat can be modified to produce a useful set of criteria for suitable habitat.

Habitat for California jewelflower is found at elevations from 240 # 2,950 feet in Nonnative Grassland, Upper Sonoran Subshrub Scrub, and Cismontane Juniper Woodland and Scrub. Associated species include annual fescue (*Vulpia microstachys*), red brome (*Bromus madritensis* ssp. *rubens*), clovers (*Trifolium* spp.), goldfields (*Lasthenia californica*), red maids (*Calandrinia ciliata*), fiddleneck (*Amsinckia* spp.), Mormon tea (*Ephedra californica*), California juniper (*Juniperus californicus*), and California buckwheat (*Eriogonum fasciculatum*). Soils are mostly subalkaline, sandy loams. California jewelflower occurrences show no preference for aspect and typically occur on plains, low hills, and old river terraces.

Protocols for surveys of Suitable Habitat - Presence/Absence Determination

Detectability Profile: Annual variation in detectability is high. California jewelflower is known to have a fairly long-lived seed bank. In years with unfavorable weather, plants may not germinate or persist long enough to produce stems and flowers. In such years there is no or low detectability, even during the months of April and May.

In years of favorable weather, California jewelflower is highly detectable from April to May with surveys normally occurring during this period, and has low to moderate detectability in March and June. The species is generally not detectable from July through February.

Survey Requirements for Negative Determinations in Suitable Habitat

Repeat Requirements: One or more members of the field survey crew shall visit at least one of the occurrences of California jewelflower located in the Cuyama River watershed prior to initiating surveys to verify that precipitation has been adequate to stimulate the germination and establishment of California jewelflower and to determine its phenology and detectability. Surveys shall be postponed if California jewelflower is not detected at known sites or if the plants are inconspicuous due to poor growth. Plants will be considered inconspicuous if more than 50 percent of the individuals within an occurrence are less than 2 dm tall.

Survey Intensity: Surveys for California jewelflower shall be conducted by walking parallel transects spaced about 10 meters apart throughout the entire target area. The target areas are the polygons of modeled habitat shown on map sccs_hab_caca21_6. The total area of these polygons is 160 acres.

References

- Danielsen, Karen C., Theresa M. Austin, and Celeste Lee-Wong. 1994. Field Inventory of *Caulanthus californicus* (California Jewelflower) in Los Padres National Forest. Unpublished report on file, Los Padres National Forest, Goleta, CA.
- Magney, David L. 1988. Habitat Survey for California Jewelflower *Caulanthus californicus* (S. Watson) Payson in the Los Padres National Forest. Unpublished report on file, Los Padres National Forest, Goleta, CA.
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Ceanothus ophiochilus

Suitable Habitat Criteria Suitability and Survey Requirements for

Ceanothus ophiochilus S.Boyd, T. Ross, and L. Arnseth

Vail Lake Ceanothus

September 2002

Modeled habitat for *Ceanothus ophiochilus* is based on GIS parameters CNF soils coverage - Las Posas series, Ramona series (buffer by 90 meters), northern portion of Palomar District, with slopes less than 30% at elevations of 1900-2600 feet. Associated vegetation is chamise chaparral, ceanothus crassifolius chaparral.

Suitable Habitat

The following criteria must be met:

Clay soil derived from gabbro parent material or metavolcanic bedrock.

Within the same watershed or watershed immediately adjacent to a known population (see hard copy map).

Habitat assessment

Can occur at any time throughout the year.

Note: All known populations on NFS lands are on gabbro material.

Protocol for Surveys of Suitable Habitat - Presence/Absence Determination

Detectability Profile: This species is a shrub and is highly detectable year-round. Flowers from mid-February to March (consistently flowers in March on NFS lands).

Survey Requirements for Negative Determination in Suitable Habitat

Repeat Requirements: Because this species has low annual variability in presence, and it is highly detectable year-round, a negative determination (absence finding) may be rendered after one year of survey during which the species is detected at a reference population.

Survey Intensity: Surveys may be conducted year-round. During the flowering season, surveys for Vail Lake Ceanothus shall be conducted by walking parallel transects spaced 25 meters apart throughout the entire target area. Before or after the flowering season, surveys for Vail Lake Ceanothus shall be conducted by walking parallel transects spaced 3 meters apart.

References:

Cleveland National Forest botanical field survey records on file at supervisor's office.

Hickman, J.C. 1993. The Jepson Manual: Higher Plants of California. University of California Press, Berkeley and Los Angeles, CA. 1400 pp.

USDI, FWS. 1998. Endangered and threatened wildlife and plants: Endangered or threatened status for three plants from the chaparral and scrub of southwestern California. Federal Register 63(197): 54956-54971.

Chlorogalum purpureum reductum

Suitable Habitat Criteria and Survey Requirements

Chlorogalum purpureum Bdg. var. *reductum* Hoover

Camatta Canyon amole

August 2002

Approximately 41 acres of key habitat occur on NFS lands. No additional occupied or modeled habitat occurs due to the unique habitat features. One occurrence is found on a combination of private and NFS land (the Santa Lucia Ranger District of the LPNF).

Suitable Habitat

Surveys would be conducted for proposed forest management activities occurring 1) in sparsely vegetated annual grasslands [vegetation map unit 2; CalVeg series annual grass/forb (HG)] surrounded by oak savannah, and 2) within the general geographic range of occupied habitat of the La Panza Range of San Luis Obispo County. An area will be identified as suitable habitat only if it is found to be occupied by Camatta Canyon amole.

Protocol for Surveys of Suitable Habitat # Presence/Absence Determination

Detectability Profile: Annual variation is moderate. Camatta Canyon amole is a perennial bulb or geophyte. Within a population, there is substantial variation in the number of plants that express themselves with above ground biomass. In years of favorable weather, Camatta Canyon amole is highly detectable from April to May when surveys would normally occur, and has moderate detectability in March and June.

Survey Requirements for Negative Determination in Suitable Habitat:

Repeat Requirements: One or more members of the field survey crew shall visit at least one of the occurrences of Camatta Canyon amole located in the La Panza Range prior to initiating surveys to verify that precipitation has been adequate to stimulate the growth of Camatta Canyon amole and to determine its phenology. Surveys shall be postponed if Camatta Canyon amole is not detected at known sites or if the plants are inconspicuous due to poor growth. Plants will be considered inconspicuous if more than 50 percent of the individuals within an occurrence are less than 1 dm tall.

Survey Intensity: Surveys for Camatta Canyon amole shall be conducted by walking parallel transects spaced about 10 meters apart throughout the entire target area.

References

Koch, Alice. 1997. Letter to Fish and Wildlife Service dated Sept. 26, 1997.

Lopez, A. R. 1992. The Influence of Soil Chemical and Physical Factors on the Distribution of *Chlorogalum purpureum* var. *reductum*, A Rare Plant of San Luis Obispo County, California.

Magney, David. 1988. Results of Second Year Population Dynamics of the State-Listed Rare Camatta Amole (*Chlorogalum purpureum* var. *reductum*).

USDI Fish and Wildlife Service. 2000. Endangered and Threatened Wildlife and Plants; Determination of Threatened status for *Chlorogalum purpureum* (Purple Amole), a Plant from the South Coast Ranges of California. 65 FR 14878, March 20, 2000.

Chorizanthe parryi fernandina

This is a candidate species. Modeled habitat, suitable habitat criteria and specific survey requirements are not yet developed.

Dodecahema leptoceras

Suitable Habitat Criteria and Survey Requirements for

Dodecahema leptoceras (A. Gray) Rev. & Hardham (Polygonaceae)

Slender-horned spineflower

September 2002

Modeled habitat for *Dodecahema leptoceras* is based on elevations between 700 and 2,500 feet (213-762 m) for cismontane areas and up to 3,000 feet (914 m) for transmontane areas. Soil types used for modeled habitat are EsD to capture young alluvial benches in Bautista Canyon, San Jacinto Mountains. In addition, geology used for modeled habitat includes all quaternary alluvial wash, terrace and fan types (Qw, Qal, Qc, Qco, Qf, Qo, Qod, Qof, Qow, Qya, and Qyf). Areas within National Forest System Lands, plus a 1 mile buffer, were used within Los

Angeles, Riverside, San Bernardino, and San Diego counties, excluding all areas designated as urban using vegetation layers and satellite imagery interpretation.

Suitable Habitat

The following criteria 1, 2 and 3 must be met OR criteria 4 must be met:

1. Vegetation is alluvial fan sage scrub, sage scrub (coastal or inland types), or basin sagebrush. Associated species may include *Cercocarpus betuloides*, *Chorizanthe* spp., *Juniperus californica*, *Lastarriaea coriacea*, *Mucronea californica*, and *Yucca whipplei*.
2. Site is composed of open vegetation structure.
3. Sandy, gravelly, or silty alluvial soils associated with any alluvial benches, fans or terraces.
- or- 4. Unconsolidated/decomposed granite slopes near alluvial systems that support *Lastarriaea coriacea* and *Chorizanthe* spp.

Protocol for Surveys of Suitable Habitat - Presence/Absence Determinations

Detectability Profile: *Dodecahema leptoceras* is highly variable in size and density from year to year, depending on amount and timing of winter rains, and can range from zero to high detectability during the optimal survey period. In years with average or above average growing conditions, plants (where up) are highly detectable during the flowering period (generally April-June), and for about two months thereafter while the inflorescence stalks are intact and red.

Plants are annual and there is high variability in the expression and distribution of occurrences, between years with average or above average growing conditions. In dry years, or sometimes years following dry years, detectability of occurrences can range from low to zero.

Survey Requirements for Negative Determination in Suitable Habitat

Repeat Requirements: This species has high annual variability in presence, and exhibits high detectability under optimal conditions. A negative determination requires at least two years of complete surveys. If any of those two years are characterized by low detectability based on condition of the reference population, an additional (3rd) year will be required for a negative determination.

For each survey year, one complete survey at a time when detectability is confirmed at the reference population, and one complete follow-up survey within 4 weeks will provide sufficient repeat confidence. Surveys should be postponed any year where detectability is zero, or very poor at the reference population, as negative survey data from such years are not reliable.

Survey Intensity: During the flowering season and shortly after while inflorescence stalks are still intact and red suitable habitat must be surveyed in walking transects no more than 2 meters apart.

References:

- Allen, Edith B. 1996. Characterizing the habitat of slender-horned spineflower (*Dodecahema leptoceras*), Ecological analysis. Prepared for California Department of Fish and Game, Region 5, Long Beach.
- California Natural Diversity Data Base (CNDDB). 2000. Version 2.1.2. California Department of Fish and Game.
- Hickman, James C., ed. 1993. The Jepson Manual, Higher Plants of California. University of California Press, Berkeley.
- Jennings, Charles W. and Rudolph G. Strand. 1969. Los Angeles Sheet. Geologic Map of California, Olaf P. Jenkins Edition. California Division of Mines and Geology, San Francisco.
- Munz, Philip A. 1974. A Flora of Southern California. University of California Press, Berkeley.
- Rogers, Thomas H. 1967. San Bernardino Sheet. Geologic Map of California, Olaf P. Jenkins Edition. California Division of Mines and Geology, San Francisco.
- Tibor, David P., ed. 2001. Inventory of Rare and Endangered Plants of California, 6th edition. California Native Plant Society, Sacramento, CA.

Dudleya cymosa ovatifolia

Suitable Habitat Criteria Suitability and Survey Requirements for

Dudleya cymosa ssp. *ovatifolia* (Britton) Moran

Oval-leaved Dudleya

September 2002

Modeled habitat for *Dudleya cymosa* ssp. *ovatifolia* was based on the potential habitat mapped during 1999 surveys by Rancho Santa Ana Botanic Gardens.

Suitable Habitat:

The following criteria must be met:

1. The site is a rocky talus slope (Jurassic/Triassic volcanic origin) or a rocky outcrop with forms specific to sedimentary conglomerate or volcanic breccia.

Associates may include *Poa secunda*, *Calochortus weedii*, *Selaginella bigelovii*, *Bloomeria crocea*.

Habitat assessment

Aerial photos may be used to generate more precise mapping of where these habitat types are present within the modeled habitat.

Protocol for Surveys of Suitable Habitat - Presence/Absence Determination

Detectability Profile: Highly detectable in May and June. Not readily detectable at other times of year.

Survey Requirements for Negative Determination in Suitable Habitat

Repeat Requirements: One or more members of the field survey crew shall visit the known occurrence of Oval-leaved Dudleya at Modjeska Peak prior to initiating surveys to verify that precipitation has been adequate to stimulate the growth of Oval-leaved Dudleya and to determine its phenology and detectability - *survey only if the plants at a reference location are highly detectable*. This species is highly detectable and exhibits low variability. A negative determination (absence finding) may be rendered after one year of survey during which the species is detected flowering in abundance at a reference populations.

Survey Intensity: Surveys shall be conducted in May or June within one week of observing Oval-leaved Dudleya in flower at a reference location. When possible, surveys for Oval-leaved Dudleya shall be conducted by walking parallel transects spaced 3 meters apart throughout the entire target area. However, due to the unconsolidated slopes and threats to both surveyor and plants a binocular survey from adjacent stable areas is recommended when plants are known to be flowering. This method has been used by Fred Roberts and by Rancho Santa Ana Botanic Garden botanists in previous surveys (Roberts 1991, Soza and Boyd 1999)

References:

Roberts, Fred. 1991. Rare plant surveys of Orange County inholdings. Report prepared for the Cleveland National Forest.

Soza, V. and S. Boyd. 1999. Surveys for *Dudleya cymosa ovatifolia*, Cleveland National Forest. 24 pp. Unpublished report, CNF files.

USFWS. 1997. Endangered and threatened wildlife and plants: Determination of endangered status for two plants and threatened status for four plants from southern California. Federal Register 62 (19): 4172-4183.

Eriastrum densifolium sanctorum

The species is restricted to alluvial fan scrub and alluvial wash habitats. All known occupied habitat is near the San Bernardino National Forest. There are no known populations, nor any modeled habitat, on National Forest System land.

Eriastrum hooveri

Suitable Habitat Criteria and Survey Requirements

Eriastrum hooveri(Jeps.) Mason

Hoover's eriastrum

August 2002

Starting point for habitat assessments will be areas identified as modeled habitat. These mapped areas (**955 acres**) are considered potential Hoover's eriastrum habitat based on selecting those areas within Southern Los Padres Ranges where: Elevation is less than 3,000 feet; and Soil map units are in Los Robles - Trigo Families # Orthents Association (24) or Orthents # Fluvents Complex (38) or Modesto # Rincon # Millsholm Families Association (31); and Vegetation type is in pinyon-juniper woodland (vegetation map unit 10) or grassland with bushy herbs (2H) or sagebrush (4) or sagebrush with oak (4W) [corresponding vegetation series in CalVeg are: Pinyon Pine (PJ), Annual grass/forb (HG), Basin Sagebrush (BS), and Scrub Oak (CS)]; and Slope is less than 30 percent; and Precipitation is less than 16 inches.

Suitable Habitat

Within the general geographic range of occupied habitat in the Sierra Madre Range of San Luis Obispo, Santa Barbara and Ventura Counties. An area will be identified as suitable habitat only if it is found to be occupied by Hoover's eriastrum.

Protocol for Surveys of Suitable Habitat # Presence/Absence Determination

Detectability Profile: Annual variation is high. Hoover's eriastrum is an annual plant. In years with unfavorable weather, plants may not germinate or persist long enough to produce stems and flowers. In years of favorable weather, Hoover's eriastrum is highly detectable from April to June, and has low to moderate detectability in March, July, and August. Surveys would normally occur during April # June.

Survey Requirements for Determination of Presence/Absence:

Repeat Requirements: One or more members of the field survey crew shall visit at least one of the occurrences of Hoover's eriastrum located in the Cuyama River watershed prior to initiating surveys to verify that precipitation has been adequate to stimulate the germination and establishment of Hoover's eriastrum and to determine its phenology. Surveys shall be postponed if Hoover's eriastrum is not detected at known sites or if the plants are inconspicuous due to poor growth. Plants will be considered inconspicuous if more than 50 percent of the individuals within an occurrence are less than 1 dm tall.

Survey Intensity: Surveys for Hoover's eriastrum shall be conducted by walking parallel transects spaced about 10 meters apart throughout the entire target area.

References

CalFlora Occurrence Database. 1999.

California Native Plant Society. 1994. Inventory of Rare and Endangered Vascular Plants of California, Fifth Edition.

Danielsen, Karen. 1993. California Natural Diversity Data Base field forms for six occurrences of *Eriastrum hooveri*.

Federal Register. 1990. Listing Notice for *Eriastrum hooveri*. 55 FR 29361, July 19, 1990.

Federal Register. 1998. Final; Recovery Plan for Upland Species of the San Joaquin Valley, California. FWS, Region 1, Portland, OR.

Hickman, James C. (editor) 1993. The Jepson Manual of Higher Plants of California. University of California Press, Los Angeles, Ca.

Hoover, Robert F. 1970. The Vascular Plants of San Luis Obispo County, California.

Jones and Stokes Associates, Inc. 1995. Analysis of Special-Status Biological Resources for the Proposed Badlands and Long Dave Valley Off-Highway Vehicle Trail Projects.

Lewis, Russ. 1992. *Eriastrum hooveri* Field Inventory.

Sawyer, J.O., Keeler-Wolf, T. 1995. A Manual of California Vegetation. California Native Plant Society. Sacramento, CA.

Smith, Clifton F. 1998. A Flora of the Santa Barbara Region, California.

Twisselmann, Ernest. 1995. A Flora of Kern County, California.

USDA, Pacific Southwest Region. 1998. Threatened, Endangered and Sensitive Plants of the Los Padres National Forest.

Erigeron parishii

Draft

Suitable Habitat Criteria and Survey Requirements for

Erigeron parishii A. Gray

(Asteraceae)

Parish's Daisy

November 2002

Modeled habitat for *Erigeron parishii* is based on the Carbonate Habitat Management Strategy (CHMS) *Erigeron parishii* (ERPA) layer of known occurrences and includes the following GIS parameters: Elevation: 3,400 ft - 7,000 ft; Slope: gentle to moderate; Vegetation types: PJBBS/PYBBS, BBS, PJCE, PJBBS, PJYUC, BBS/PJBBS; Geology: interpretive substrate coverage using stream and slope spatial data (see species-specific procedures for *Erigeron parishii* in USDA Forest Service 2001). San Bernardino Mountains.

Suitable Habitat:

The site must be in the San Bernardino Mountains and adjacent desert areas and meet both of the following criteria:

1. Carbonate soils (including alluvium of carbonate origins) or carbonate outcroppings are present.
2. Vegetation structure is relatively open; the soil surface is visible.

Most known occurrences are on the north slope of the San Bernardino Mountains. The species may be found on dry, rocky slopes of carbonate (limestone or dolomite), shallow drainages, outwash plains, margins of ephemeral washes, and colluvial slides (Olson 2002). Some occurrences are found on the granite/limestone interface (granitics overlain with limestone) and on limestone alluvium above quartz monzonite substrates. The following plant species may co-occur with *Erigeron parishii*: *Eriogonum ovalifolium* var. *vineum*, *Astragalus albens*, *Ephedra viridis*, *Chrysothamnus viscidiflorus*, *Coleogyne ramosissima*, *Salvia pachyphylla*, and *Purshia glandulosa*.

Protocol for Surveys of Suitable Habitat - Presence/Absence Determinations

Detectability Profile: *Erigeron parishii* plants are perennial and exhibit moderate variability in detectability from year to year. Although plants are visible throughout the year, positive identification can only be made when mature flowers and fresh leaves are present. During this peak flowering period, detectability is high. The plant appears to exhibit greater variability over multiple years. Occurrences may have "boom" cycles that last several years, followed by "bust" cycles (a decrease in abundance or absence of occurrences) that may also last multiple years. Flowering has been recorded between May and July (Krantz 1979), but peak flowering seems to be mid-May to mid-June.

Survey Requirements for Negative Determinations in Suitable Habitat

Repeat Requirements: Because *Erigeron parishii* exhibits "boom" and "bust" cycles that may last several years, multiple survey seasons may be necessary for a negative determination. A reference population must be visited prior to survey to confirm high detectability during the survey period. An initial survey shall be conducted, and if no *Erigeron parishii* individuals are detected, an un-confirmed negative determination will be noted. All occurrences that receive an un-confirmed negative determination in the initial survey year will be recorded in an ongoing list, kept on file at the Big Bear Ranger Station, Fawnskin, Ca. When monitoring reveals the initiation of a "boom" cycle and expansion of occupied habitat across the range of the species, all occurrences that received an un-confirmed negative determination in the initial survey year must be re-surveyed to confirm a negative determination. One follow-up survey will be completed 4-6 weeks after the first survey during the "boom" cycle, to account for phenological variability. This will provide sufficient repeat confidence for a negative determination.

Survey Intensity: Suitable habitat must be surveyed in walking transects no more than two meters apart.

References:

Krantz, T.P. 1979. A Botanical Investigation of *Erigeron parishii*. Unpublished report prepared for the USDA Forest Service. On file at the Big Bear Ranger Station, Fawnskin, Ca.

Olson, T.G. 2002. Carbonate Habitat Management Strategy. Draft unpublished report Prepared for the San Bernardino National Forest Association. On file at the Big Bear Ranger Station, Fawnskin, Ca.

Sanders, A.C. 2002. West Mojave Plan species account for Parish's Daisy (*Erigeron parishii*). Unpublished report on file at the Big Bear Ranger Station, Fawnskin, Ca.

USDA Forest Service. 2000. Criteria for Modeled Suitable Habitat # Threatened and Endangered Species: *Erigeron parishii*. Draft unpublished document on file at the Big Bear Ranger Station, Fawnskin, Ca.

USDA Forest Service. 2001. Carbonate Species Suitable Habitat Models. Unpublished report on file at the Big Bear Ranger Station, Fawnskin, Ca.

Eriogonum kennedyi austromontanum

Draft

Suitable Habitat Criteria and Survey Requirements for

Eriogonum kennedyi Watsonvar. *austromontanum* Munz & I.M. Johnston (Polygonaceae)

Southern Mountain Buckwheat

September 2002

Modeled habitat for *Eriogonum kennedyi* var. *austromontanum* is based on known pebble plain distribution plus a 1/8 mile buffer.

Suitable Habitat

Suitable habitat is found on pebble plains in openings in pinyon and juniper woodlands, Jeffrey pine forest, and mixed conifer forest. Pebble plains are generally found on ridgetops and gentle mountain slopes with less than 15% slope (USDA Forest Service 2000).

Pebble plains are determined using a point system, where characteristics indicative of pebble plains are given a point value, depending on the reliability of the indicator (USDA Forest Service 2002). Suitable habitat is present when at least four points are achieved. Any combination of the following criteria adding up to four points must be met:

Strong Indicators (2 points each: often occur on pebble plains, rarely occur off of pebble plains)

Clay soils with open canopy

Presence of *Eriogonum kennedyi* var. *kennedyi*
Presence of *Eriogonum kennedyi* var. *austromontanum*
Presence of *Arenaria ursina*
Presence of *Ivesia argyrocoma*

Weak Indicators (1 point each: often occur on pebble plains, variably occur off of pebble plains)

Presence of *Allium parryi*
Presence of *Antennaria dimorpha*
Presence of *Arabis parishii*
Presence of *Astragalus purshii* var. *lectulus*
Presence of *Castilleja cinerea*
Presence of *Dudleya abramsii* ssp. *affinis*
Presence of *Echinocereus engelmannii*
Presence of *Erigeron aphanactis* var. *congestus*
Presence of *Eriogonum wrightii* var. *subscaposum*
Presence of *Lewisia rediviva*
Presence of *Lomatium nevadense* var. *parishii*
Presence of *Mimulus purpureus*

Protocol for Surveys of Suitable Habitat # Presence/Absence Determinations

Detectability Profile: *Eriogonum kennedyi* var. *austromontanum* plants are highly detectable throughout the year (unless there is snow on the ground), but they are identifiable only during peak flowering period. While flowering has been documented from July through September, commencement of the flowering period may vary across occurrences with climate and geography.

Eriogonum kennedyi var. *austromontanum* is difficult to distinguish from *Eriogonum kennedyi* var. *kennedyi*, which also occurs on pebble plains and overlaps in morphological characteristics. *Eriogonum kennedyi* var. *kennedyi* has a flowering period from April to June, varying with climate and geography. Although variability exists, SBNF botanists have used flowering time along with other key character to identify *Eriogonum kennedyi* var. *austromontanum* in the field. Studies are currently being conducted by SBNF botanists to determine whether mature fruits (achene length) may also be used to reliably distinguish the varieties (per Reveal 1989). Any occurrences of *Eriogonum kennedyi* (within the range of *Eriogonum kennedyi* var. *austromontanum*) that cannot be identified to variety should be treated as the listed variety.

On the species level, *Eriogonum kennedyi* can be easily distinguished from *Eriogonum wrightii* var. *subscaposum* during peak flowering. *Eriogonum wrightii* var. *subscaposum* flowers July through October (Munz 1974) and possesses branched scapes and inflorescences at flowering maturity, while both *Eriogonum kennedyi* varieties generally possess unbranched scapes and inflorescences in full flowering. However, the species cannot be separated with confidence from *Eriogonum wrightii* var. *subscaposum* before the peak flowering period or after inflorescences have fallen off plants.

Plants of both *Eriogonum kennedyi* varieties are perennial and occur in the same locations year to year, exhibiting low annual variability in presence and high variability in flowering phenology, based on climate and geography. Plants may flower very late or not at all in very dry years.

Survey Requirements for Negative Determination in Suitable Habitat

Repeat Requirements: Until consistently reliable characters are identified for distinguishing *Eriogonum kennedyi* var. *austromontanum* from *Eriogonum kennedyi* var. *kennedyi*, a negative determination (absence finding) within the range of *Eriogonum kennedyi* var. *kennedyi* can be made on a species level (*Eriogonum kennedyi*) only.

Although *Eriogonum kennedyi* var. *kennedyi* and *Eriogonum kennedyi* var. *austromontanum* are perennial and exhibit low variability within occurrences from year to year, some individuals within an occurrence do not flower in any given year. For this reason, a negative determination requires three surveys over two survey seasons. A survey will be conducted during the peak flowering periods for *Eriogonum kennedyi* var. *kennedyi*, *Eriogonum kennedyi* var. *austromontanum*, and *Eriogonum wrightii* var. *subscaposum*. The first survey will be conducted in May, during peak flowering for *Eriogonum kennedyi* var. *kennedyi*. If either variety of *Eriogonum kennedyi* is found during this first survey, a negative determination will be ruled out (presence finding) at the species level. If neither variety of *Eriogonum kennedyi* is identified, a second survey will be conducted in August, during the peak flowering period for *Eriogonum kennedyi* var. *austromontanum* and *Eriogonum wrightii* var. *subscaposum*. During this second survey, all flowering *Eriogonum* plants in the occurrence will be identified as *Eriogonum wrightii* var. *subscaposum*, *Eriogonum kennedyi* var. *austromontanum*, *Eriogonum kennedyi* var. *kennedyi*, or other *Eriogonum* species. Even if all of the flowering *Eriogonum* plants in the occurrence can be confidently identified as *Eriogonum wrightii* var. *subscaposum* (or taxa other than *Eriogonum kennedyi* varieties), the site must be re-surveyed the following year in August to confirm that no non-flowering individuals from the initial survey year are *Eriogonum kennedyi*. If no *Eriogonum kennedyi* individuals are found after the second survey year, a negative determination can be made with sufficient confidence.

Once consistently reliable characters are identified to distinguish *Eriogonum kennedyi* var. *austromontanum* from *Eriogonum kennedyi* var. *kennedyi*, representative reference occurrences will be established for the listed taxon. A negative determination for *Eriogonum kennedyi* var. *austromontanum* will require two surveys over one survey season. A survey will be completed at a time when high detectability of *Eriogonum kennedyi* var. *austromontanum* is confirmed at a reference population. One follow-up survey will be completed 4-6 weeks later, to account for phenological variability. This will provide sufficient repeat confidence for a negative determination.

Survey Intensity: Suitable habitat must be surveyed in walking transects no more than five meters apart.

References:

Krantz, T.P. 1981. A survey of two pavement plain endemics: the Bear Valley sandwort, *Arenaria ursina*, and Big Bear Buckwheat, *Eriogonum kennedyi* var. *austromontanum*. A study of the taxa throughout their ranges. Unpublished report prepared for the San Bernardino National Forest on file at the Big Bear Ranger Station, Fawnskin, Ca.

Munz, P.A. 1974. A Flora of Southern California. University of California Press, Berkeley and Los Angeles, Ca.

Reveal, J.L. 1989. The Eriogonoid Flora of California (Polygonaceae: Eriogonoideae). *Phytologia*: 66(4): 295-414.

USDA Forest Service. 1999. Biological Assessment on the effects of ongoing Forest activities that may adversely affect federally Threatened pebble plain plants on the San Bernardino National Forest. Unpublished report on file at the Forest Supervisor's Office, San Bernardino, Ca, and the Big Bear Ranger Station, Fawnskin, Ca.

USDA Forest Service. 2000. Criteria for Modeled Suitable Habitat # Threatened and Endangered Species: *Eriogonum kennedyi* var. *austromontanum*. Draft Unpublished document on file at the Big Bear Ranger Station, Fawnskin, Ca.

USDA Forest Service. 2002. Pebble Plain Habitat Management Guide. Unpublished report on file at the Big Bear Ranger Station, Fawnskin, Ca.

Eriogonum ovalifolium vineum

Draft

Suitable Habitat Criteria and Survey Requirements for

Eriogonum ovalifolium Nutt.var. *vineum* (Small) Jepson

(Polygonaceae)

Cushenbury Buckwheat

November 2002

Modeled habitat for *Eriogonum ovalifolium* var. *vineum* is based on the Carbonate Habitat Management Strategy (CHMS) (Olson 2002) *Eriogonum ovalifolium* var. *vineum* (EROVV) layer of known occurrences and includes the following GIS parameters: Elevation: 4,000 ft - 10,000 ft; Slope: moderate to steep; Vegetation types: PJCE, PJBBS, BBS, PJYUC/PYPUYUC, PJBBS/PYBBS, PJBBS/PJCE, PJUOC; Geology: PBM, PBL, EB. San Bernardino Mountains.

Suitable Habitat:

The site must be in the San Bernardino Mountains and meet both of the following criteria:

1. Carbonate soils or carbonate outcroppings are present.
2. Vegetation structure is relatively open; soil surface is visible.

Most occurrences are on the north slope of the San Bernardino Mountains. The species occurs on fine limestone or dolomite soils with greater than 50% rock cover. Many sites are on colluvial slides and in or around actively eroding talus. The species co-occurs with *Astragalus albens*, *Lesquerella kingii* ssp. *bernardina*, *Oxytheca parishii* var. *goodmaniana*, *Erigeron parishii*, *Arabis shockleyi*, and *Coleogyne ramosissima* throughout its range. *Eriogonum microthecum* var. *corymbosoides* is a good indicator for *Eriogonum ovalifolium* var. *vineum*. When not in flower, this taxon may be confused with *Eriogonum saxatile*.

Protocol for Surveys of Suitable Habitat - Presence/Absence Determinations

Detectability Profile: *Eriogonum ovalifolium* var. *vineum* plants are woody perennial cushion plants and are highly detectable throughout the year and across years. Plants also exhibit low annual variability in distribution and are readily identifiable. The species flowers between May and August (Munz 1974; USDA Forest Service 2000).

Survey Requirements for Negative Determination in Suitable Habitat

Repeat Requirements: Because this species has low annual variability and high detectability throughout the year, a negative determination (absence finding) may be made in a single survey season. A reference population must be visited prior to survey to confirm flowers of *Eriogonum ovalifolium* var. *vineum* and *Eriogonum saxatile* during the survey period. One survey will be sufficient for a negative determination at the time when high detectability is confirmed, unless *Eriogonum ovalifolium* var. *vineum* cannot be distinguished from *Eriogonum saxatile*. In this case, one follow-up survey will be completed 4-6 weeks later. This will provide sufficient repeat confidence for a negative determination.

Survey Intensity: Suitable habitat must be surveyed in walking transects no more than two meters apart.

References:

- Munz, P.A. 1974. A Flora of Southern California. University of California Press, Berkeley and Los Angeles, Ca.
- Olson, T.G. 2002. Carbonate Habitat Management Strategy. Draft unpublished report Prepared for the San Bernardino National Forest Association. On file at the Big Bear Ranger Station, Fawnskin, Ca.
- USDA Forest Service. 2000a. SBNF Mountaintop Ranger District Resource files. On file At the Big Bear Ranger Station, Fawnskin, Ca.
- USDA Forest Service. 2000b. Criteria for Modeled Suitable Habitat # Threatened and Endangered Species: *Eriogonum ovalifolium* var. *vineum*. Draft unpublished document on file at the Big Bear Ranger Station, Fawnskin, Ca.
- USDA Forest Service. 2001. Carbonate Species Suitable Habitat Models. Unpublished report on file at the Big Bear Ranger Station, Fawnskin, Ca.

Lesquerella kingii bernardina

Draft

Suitable Habitat Criteria and Survey Requirements for

Lesquerella kingii (S. Watson) S. Watson ssp. *bernardina* (Munz) Munz

(Brassicaceae)

San Bernardino Mountains Bladderpod

November 2002

Modeled habitat for *Lesquerella kingii* ssp. *bernardina* is based on the Carbonate Habitat Management Strategy (CHMS) *Lesquerella kingii* ssp. *bernardina* (LEKIB) layer of known occurrences and includes the following GIS parameters: Elevation: (lower only) 6,600 ft +; Slope: gentle to moderate, south- or north-facing (Myers and Barrows 1988); Vegetation types: PJUOC, PJUOCJP, PIJE, MXCLP, LPJPWF; Geology: EB, PZF. San Bernardino Mountains.

Suitable Habitat

The site must be in the San Bernardino Mountains and meet all of the following criteria:

1. Carbonate soils or carbonate outcroppings are present.
2. Vegetation structure is relatively open; soil surface is visible.
3. Associated with Jeffrey pine, pinyon pine-western juniper, or upper mixed conifer forest types.

Lesquerella kingii ssp. *bernardina* occupies the smallest area of the five listed carbonate taxa (USFWS 1997) and is found on the eastern end of Bertha Ridge and on the north-facing slope of Sugarlump Ridge. All known occurrences are on dolomite. Occurrences on the eastern end of Bertha Ridge co-occur with *Eriogonum ovalifolium* var. *vineum*. *Phlox austromontanum* is a good indicator of suitable habitat.

Protocol for Surveys of Suitable Habitat # Presence/Absence Determinations

Detectability Profile: *Lesquerella kingii* ssp. *bernardina* is a long-lived perennial with moderate detectability during peak survey months. Annual variability is low, although variability is associated with summer rainfall (Wilson and Bennett 1980). Flowering typically occurs between late April and early May, and fruiting occurs late May through July (Myers and Barrows 1988).

Survey Requirements for Negative Determinations in Suitable Habitat

Repeat Requirements: Because this species has low annual variability and moderate detectability during peak survey months, a negative determination (absence finding) may be made in a single survey season. A reference population must be visited prior to survey to confirm high detectability during the survey period. If detectability at the reference population is found to be low, one additional survey season where detectability is high at a reference population will be required for a negative determination.

One survey will be completed at a time when high detectability is confirmed at a reference population, and one follow-up survey will be completed 4-6 weeks later, to account for phenological variability. This will provide sufficient repeat confidence for a negative determination.

Survey Intensity: Suitable habitat must be surveyed in walking transects no more than two meters apart.

References:

- Munz, P.A. 1974. A Flora of Southern California. University of California Press, Berkeley and Los Angeles, Ca.
- Myers, M. and K. Barrows. 1988. Element Conservation Plan for *Lesquerella kingii* ssp. *bernardina*. Unpublished report on file at the Big Bear Ranger Station, Fawnskin, Ca.
- Olson, T.G. 2002. Carbonate Habitat Management Strategy. Draft unpublished report Prepared for the San Bernardino National Forest Association. On file at the Big Bear Ranger Station, Fawnskin, Ca.
- USDA Forest Service. 2001. Carbonate Species Suitable Habitat Models. Unpublished report on file at the Big Bear Ranger Station, Fawnskin, Ca.
- USDA Fish and Wildlife Service. 1997. San Bernardino Mountains Carbonate Plants Draft Recovery Plan. U.S.

Fish and Wildlife Service, Portland, Oregon. 51p.

Wilson, R.C. and J.C. Bennett. 1980. A Field Survey of *Lesquerella kingii* ssp. *bernardina*. Unpublished report for the San Bernardino National Forest.

Oxytheca parishii goodmaniana

Draft

Suitable Habitat Criteria and Survey Requirements for

Oxytheca parishii C. Parry var. *goodmaniana* B. Errter

(Polygonaceae)

Cushenbury *Oxytheca*

November 2002

Modeled habitat for *Oxytheca parishii* var. *goodmaniana* is based on the Carbonate Habitat Management Strategy (CHMS) *Oxytheca parishii* var. *goodmaniana* (OXPA) layer of known occurrences and includes the following GIS parameters: Elevation: 4,400 ft # 8,200 ft; Slope: gentle to moderate; Vegetation types: PJUOC, PJUOCJP, PJBBS, PJBBS/PJCE, PJCE, PJYUC; Geology: PBU, PBM, PBL, PZF, MMM, MMU, DSC. San Bernardino Mountains.

Suitable Habitat

The site must be in the San Bernardino Mountains and meet both of the following criteria:

1. Carbonate soils or carbonate outcroppings are present.
2. Vegetation structure is relatively open; soil surface is visible.

All occurrences of *Oxytheca parishii* var. *goodmaniana* are on the north slope of the San Bernardino Mountains, distributed from Terrace Springs on the east to White Mountains on the west (USDA Forest Service 2000). Although the taxon generally occurs on limestone or a mixed lithology of limestone and dolomite (Tierra Madre Consultants 1992), some occurrences are from colluvial slides, in or around actively eroding talus, and on dry gravel material on road cuts (White 1999). All sites are of carbonate lithology (Neel 2000). *Oxytheca parishii* var. *goodmaniana* grows in the understory of pinyon-mahogany woodland, canyon live oak woodland, or small patches within yellow pine forest (Roberts 2001), and may be associated with *Eriogonum parishii*, *Astragalus leucolobus*, *Salvia pachyphylla*, *Ephedra viridis*, and *Argemone munita*. *Eriogonum microthecum* var. *corymbosoides* is a good indicator for *Oxytheca parishii* var. *goodmaniana*.

Protocol for Surveys of Suitable Habitat # Presence/Absence Determinations

Detectability Profile: *Oxytheca parishii* var. *goodmaniana* is an annual species that exhibits high annual variability in detectability from year to year. During peak flowering, the taxon is highly detectable, but annual presence, abundance and location of occurrences are unpredictable and possibly correlated with rainfall, fire, and mechanical disturbance (USDA Forest Service 2001). Flowering has been recorded from June through September.

Survey Requirements for Negative Determinations in Suitable Habitat

Repeat Requirements: Because *Oxytheca parishii* var. *goodmaniana* has high annual variability and is highly detectable during peak survey months, a negative determination (absence finding) may be made in a single survey season. A reference population must be visited prior to survey to confirm high detectability during the survey period. If detectability at the reference population is found to be low, one additional survey season will be required for a negative determination.

One survey will be completed at a time when high detectability is confirmed at a reference population, and one follow-up survey will be completed 4-6 weeks later, to account for phenological variability. This will provide sufficient repeat confidence for a negative determination.

Survey Intensity: Suitable habitat must be surveyed in walking transects no more than two meters apart.

References:

Neel, M.C. 2000. The Structure of Diversity: Implications for Reserve Design. A Dissertation submitted in partial satisfaction of the requirements for the degree of Doctor of Philosophy in Botany, University of California, Riverside. On file at the Big Bear Ranger Station, Fawnskin, Ca.

Olson, T.G. 2002. Carbonate Habitat Management Strategy. Draft unpublished report Prepared for the San Bernardino National Forest Association. On file at the Big Bear Ranger Station, Fawnskin, Ca.

Roberts, F.M., Jr. 2001. California Native Species Field Survey forms for *Oxytheca parishii* var. *goodmaniana*. Field work dates 7-16-01, 7-17-01.

Sanders, A.C. 2002. West Mojave Plan species account for Cushenbury *Oxytheca* (*Oxytheca parishii* var. *goodmaniana*). Unpublished report on file at the Big Bear Ranger Station, Fawnskin, Ca.

Tierra Madre Consultants. 1992. Unpublished report on file at the Big Bear Ranger Station, Fawnskin, Ca.

USDA Forest Service. 2000. Criteria for Modeled Suitable Habitat # Threatened and Endangered Species: *Erigeron parishii*. Draft unpublished document on file at the Big Bear Ranger Station, Fawnskin, Ca.

USDA Forest Service. 2001. Carbonate Species Suitable Habitat Models. Unpublished report on file at the Big Bear Ranger Station, Fawnskin, Ca.

White, S. 1999. Letter to San Bernardino National Forest, dated 11/24/99. Scott White Biological Consulting.

Poa atropurpurea

Suitable Habitat Criteria Suitability and Survey Requirements for

Poa atropurpurea Scribner

San Bernardino bluegrass

September 2002

Original modeled habitat for *Poa atropurpurea* Scribneris based on GIS Parameters: Elevation: 4000 ft (1219 meters) and up; Slope: 0-20%; Lake shore + 90 m buffer; Franklin CalVeg (HJ, HG,BS vegetation types) (use on the SBNF only where the SBNF Meadow 2000 vegetation layer does not cover. Franklin vegetation is buffered by 120 meters. SBNF Meadow 2000 GIS vegetation layer (exclude MAS, MAS, PYPJYUC, BBS/MAS). SBNF Meadow 2000 GIS layer + 120 m buffer; Perennial Streams + 90 m buffer each side; CNF soil layer using Lu, Reiff and Crouch within CNF boundary only. San Bernardino, San Jacinto and San Diego Mts (Palomar, Laguna, Cuyamaca ranges). Forest System Land plus a 1 mile buffer.

The Cleveland is working on model revision to incorporate the CNF meadow layer.

Suitable Habitat:

If habitat is within the eastern transverse range or peninsular range, and has any one of the following criteria:

Vernally wet montane meadows and associated seasonally moist stringers or swales, without closed tree canopy.

Drying margins of montane alkali meadows or montane wet meadows, without closed tree canopy.

Montane lake margins supporting mesic vegetation, without closed tree canopy.

Alluvial margins of rocky knolls with pronounced relief above montane wet meadow habitat, without closed tree canopy.

If site is within San Diego County, the presence of any of the following species may be associated with the presence of San Bernardino bluegrass: *Juncus effusus*, *Poa pretensis*, *Trifolium* sp., *Hordium californica*, *Layia platygloea*, or *Chaetopappa aurea*. If the site occurs within the San Bernardino Mountains, the presence of any of the following species may be associated with the presence of San Bernardino bluegrass: *Sidalcea pedata*,

Taraxacum californicum, *Thelypodium stenopetalum*, *Perideridia parishii* var. *parishii*, *Poa pretensis*, *Ranunculus californica*, *Artemisia nova* and *Juncus* and *Carex* spp.

Protocol for Surveys of Suitable Habitat - Presence/Absence Determination

Detectability profile: On the San Bernardino National Forest, plants tend to be highly detectable in June and July, with moderate detectability in May and August, and low to no detectability in other months. On the Cleveland National Forest, plants are highly detectable from mid-April through May, with moderate detectability in June. Low to no detectability in other months.

Plants occur in the same locations year to year, and generally exhibit low annual variability. However, detectability does vary with rainfall. Plants are most detectable during years with above-normal rainfall. In very dry years, actual detectability may be low to moderate during peak survey months.

Survey Requirements for Negative Determination in Suitable Habitat

Repeat Requirements: Because this species generally has low annual variability, and is generally highly detectable during peak survey months, a negative determination (absence finding) may be made in a single survey season. However, because rainfall does affect detectability, a representative reference population must be visited to confirm high detectability during the survey period. If detectability at the reference population is found to be low, one additional survey season will be needed for a negative determination.

One complete survey at a time when high detectability is confirmed at a reference population, and one complete follow-up survey 3-4 weeks afterward (to account for possible phenological variability) will provide sufficient repeat confidence for a negative determination.

Survey Intensity: Habitat must be surveyed in walking transects no more than 2 meters apart.

References:

Curto, M., 1992. Status of San Bernardino bluegrass within the Cleveland National Forest. Report prepared for USDA Cleveland National Forest, August 1992, 39pp.

Hirshberg, J., 2001. A survey for the San Bernardino bluegrass in the Garner Valley, San Jacinto Ranger District, San Bernardino National Forest. Report prepared for USDA San Bernardino National Forest, July 2001.

USDA Forest Service, 2002, San Bernardino National Forest T/E plant species GIS data.

USDI, Fish and Wildlife Service, 1998, Final rule to determine endangered or threatened status for six plants from the mountains of southern California. 63FR177, September 14, 1998, pp 49006-49022.

Rorippa gambellii

This species has a very specific and local habitat requirement that is found in on private lands within the plan area. No occupied or modeled habitat is found on National Forest System land. This species probably does not occur on National Forest System land.

Sidalcea hickmanii parishii

Small amount of modeled habitat on National Forest System land. When environmental conditions are appropriate all modeled habitat will be surveyed.

Sidalcea pedata

Draft

Suitable Habitat Criteria and Survey Requirements for

Sidalcea pedata A. Gray

Pedate checkermallow

September 2002

Original modeled habitat for *Sidalcea pedata* is based on SBNF cover names: sipehab1p and sipehab2p; elevation 5000-8500 ft (1520 m-2590 m); Slope: 0-10%; Lake shore + 90 m buffer; Franklin GIS Veg layer for SBNF (HJ, HG, BS); SBNF Meadow 2000 GIS veg later (exclude desert types MAS, MAS/PYPJYUC, BBS/MAS) + 90 m buffer each side.

Suitable Habitat

If habitat is within the eastern transverse range montane zone and meets any of the following criteria:

Vernally wet montane meadows and associated seasonally moist stringers or swales, without closed tree canopy.

Any other montane graminoid-dominated wetland area (*i.e.* dominated by *Juncus* spp., *Carex* spp., and/or wetland-associated grasses), without closed tree canopy.

Montane lake margins supporting mesic herbaceous vegetation.

Alkaline flats and lakeshores.

Within wet meadow habitats, *Sidalcea pedata* tends to occupy relatively drier portions of the landscapes. Individual plants are usually not found in dense rush and sedge thickets typically found in the wettest portions of drainages, swales, and meadows. Occurrences in Big Bear Valley of the San Bernardino Mountains reach up to 8200 feet. Montane zones generally occur between 6,000 # 9,500 feet (USDI Fish & Wildlife Service 1998). (A historic occurrence in the Deer Lick area is at 5,000 feet.) Associated species include *Achillea millefolium*, *Elymus trachycaulus* ssp. *trachycaulus*, *Lupinus confertus*, *Potentilla gracilis*, *Danthonia cespitosa* ssp. *cespitosa*, *Taraxacum californicum*, *Poa pratensis*, and several other graminoid species.

Protocol for Surveys of Suitable Habitat - Presence/Absence Determinations

Detectability Profile: Plants are highly detectable when flowering. On the San Bernardino National Forest, plants reach full bloom from May to July. Flowers are generally large and conspicuous.

Plants occur on the same locations year to year, and generally exhibit low annual variability. However, detectability may vary with rainfall.

Survey Requirements for Negative Determination in Suitable Habitat

Repeat Requirements: Because this species generally has low annual variability in presence, and it is generally highly detectable during the flowering period, a negative determination (absence finding) may be made in a single survey season. However, because annual variation in timing of the flowering period is high, and because rainfall amount and timing can affect detectability, a representative reference population must be visited to confirm high detectability during the survey period. If detectability is found to be low, one additional survey season with low or better detectability (re-confirmed at the reference site) will be required for a negative determination.

One complete survey at a time when high detectability is confirmed at a reference population, and one complete follow-up survey within four weeks will provide sufficient repeat confidence for a negative determination. Where two seasons are required because of low detectability during the first season, each season will consist of a complete survey during the confirmed flowering period and a complete follow-up survey within four weeks.

Survey Intensity: Suitable habitat must be surveyed in walking transects no more than 2 meters apart.

References:

California Department of Fish and Game. 1998. RAREFIND. A computer database of the California Natural Diversity Database.

USDA Forest Service, 2002, San Bernardino National Forest T/E plant species GIS data.

USDI, Fish & Wildlife Service. 1998b. Recovery Plan for *Sidalcea pedata* and *Thelypodium stenopetalum*.

USDI, Fish and Wildlife Service, 1998, Final rule to determine endangered or threatened status for six plants from the mountains of southern California. 63FR177, September 14, 1998, pp 49006-49022.

Taraxacum californicum

Suitable Habitat Criteria and Survey Requirements for

Taraxacum californicum Munz & I.M. Johnston

California taraxacum, California dandelion

September 2002

Modeled habitat for *Taraxacum californicum* is based on CNF cover name: taca5_screen and SBNF cover name: tacahab1p; elevations 5000-9000 ft (1520 m-2735 m); Slope: 0-20%; Lake shore + 90 m buffer; Franklin GIS vegetation layer for SBNF (HJ, HG,BS vegetation types); SBNF Meadow 200 GIS vegetation layer (exclude desert types) +120 m buffer; Perennial Streams + 90 m buffer each side.

Suitable Habitat

If habitat is within the eastern transverse range and northern Peninsular range (San Jacinto) montane zones and meets any of the following criteria:

Vernally wet montane meadows and associated seasonally moist stringers or swales, without closed tree canopy.

Any other montane graminoid-dominated wetland area (*i.e.* dominated by *Juncus* spp., *Carex* spp., and/or wetland-associated grasses), without closed tree canopy.

Montane lake margins supporting mesic herbaceous vegetation.

Occurrences on the San Bernardino NF reach up to 8,700 feet. Montane zones generally occur between 6,000 # 9,500 feet.

Protocol for Surveys of Suitable Habitat - Presence/Absence Determinations

Detectability Profile: Plants are highly detectable when flowering. While flowering has been documented from April through August, the flowering period only lasts about a month and the start varies widely year to year with climate variation, and geographically within years with elevation and meadow moisture. The most reliable flowering period between 1998 and 2002 has been May-June. Detectability outside the flowering period is low to zero, as basal leaves are often hidden among dense graminoids.

Plants are perennial and occur in the same locations year to year; and exhibit relatively low annual variability (in presence), except in very dry years. In very dry years, detectability may be moderate to low during the flowering period, as some plants will not flower. Surveyors must have demonstrated ability to identify *Taraxacum californicum*, *Taraxacum officinale*, and morphological intermediates in the field.

Survey Requirements for Negative Determinations in Suitable Habitat

Repeat Requirements: Because this species generally has low annual variability in presence, and it is generally highly detectable during the flowering period, a negative determination (absence finding) may be made in a single survey season. However, because annual variation in timing of the flowering period is high, and because rainfall amount and timing affects detectability, a representative reference population must be visited to confirm high detectability during the survey period. If detectability is found to be low, one additional survey season with low or better detectability (re-confirmed at the reference site) will be required for a negative determination.

One complete survey at a time when high detectability is confirmed at a reference population, and one complete follow-up survey within 4 weeks will provide sufficient repeat confidence for a negative determination. Where two seasons are required because of low detectability during the first season, each season will consist of a complete survey during the confirmed flowering period and a complete follow-up survey within 4 weeks. Detection of morphological intermediates will be treated as a positive finding.

Survey Intensity: Suitable habitat must be surveyed in walking transects no more than 2 meters apart.

References:

Lyman, J.C., N.C. Ellstrand 1998. Relative contribution of breeding system and endemism to genotypic diversity: the outcrossing endemic *Taraxacum californicum* vs. the widespread apomict *T. officinale* (sensu lato). *Madrone* 45: 283-289.

Richards, A.J. 1986. The origin of *Taraxacum* agamospecies. *Bot. J. Linn. Soc.* 66: 189-221.

Tas, I.C.Q. and P.J. Van Dijk 1999. Crosses between sexual and apomictic dandelions (*Taraxacum*). I. The inheritance of apomixis. *Heredity* 83: 707-714.

USDA Forest Service, 2002, San Bernardino National Forest T/E plant species GIS data.

USDI, Fish and Wildlife Service, 1998, Final rule to determine endangered or threatened status for six plants from the mountains of southern California. 63FR177, September 14, 1998, pp 49006-49022.

Thelypodium stenopetalum

Draft

Suitable Habitat Criteria and Survey Requirements for

Thelypodium stenopetalum S. Wats.

Slender-petaled mustard

September 2002

Modeled habitat for *Thelypodium stenopetalum* is based on SBNF cover names: thsthab1p and thsthab2p; Elevation: 5000-8500 ft (1520-2590 m); Slope: 0-10%; Lake shore + 90 m buffer; BDF Meadow 2000 GIS veg layer (exclude desert types MAS, MAS,PYPJYUC, BBS/MAS) + 90 m buffer each side; SBNF Meadow 2000 GIS layer 90 m buffer (use in AND statement with elevation + slope).

Suitable Habitat

If habitat is within the eastern transverse range montane zone and meets any of the following criteria:

Vernally wet montane meadows and associated seasonally moist stringers or swales, without closed tree canopy.

Any other montane graminoid-dominated wetland area (*i.e.* dominated by *Juncus* spp., *Carex* spp., and/or wetland-associated grasses), without closed tree canopy.

Alkaline flats and lakeshores.

Seeps and springs adjacent to pebble plains.

Open sagebrush scrub associated with wet meadows.

Within wet meadow habitats, *Thelypodium stenopetalum* occupies drier portions of wet meadows or sparsely vegetated dry meadows, often in open sagebrush scrub. In these areas, associates include *Artemisia nova*, *Artemisia tridentata*, *Gutierrezia sarothrae*, *Iris missouriensis*, *Castilleja cinerea*, *Distichlis spicata*, *Oenothera californica*, and *Linum lewisii*. Occurrences are also known from transitional areas between wet meadows and pebble plains where associates include *Linanthus killipii*, *Mimulus exiguus*, *Mimulus purpureus*, *Castilleja lasiorhyncha*, *Poa atropurpurea*, *Pyrrocoma uniflora* ssp. *gossypina*, *Packera bernardina*, *Taraxacum californicum*, and *Sidalcea pedata*. Mapped occurrences known within the San Bernardino National Forest are between 6740-7340 feet (2054-2237 meters) (USDA Forest Service 2000).

Protocol for Surveys of Suitable Habitat - Presence/Absence Determinations

Detectability Profile: Plants are readily detectable when flowering. Plants generally reach full bloom from May through June, but sometimes retain flowers through July. This is a biennial species which flowers in its second year, and is difficult to detect when not flowering. *Thelypodium stenopetalum* occurs in the same locations over

time, but exhibits high annual variability in population size based on response to precipitation. Populations respond favorably to above normal precipitation and negatively to drought years. In very dry years, actual detectability may be low during peak survey months.

Survey Requirements for Negative Determination in Suitable Habitat

Repeat Requirements: This biennial species has high annual variability in presence; therefore, two complete surveys spanning two consecutive years are required before a negative determination (absence finding) may be made.

One complete survey at a time when detectability of this species is high (confirmed at a reference population) and one complete follow-up survey in a subsequent year will provide sufficient repeat confidence for a negative determination. Each season will consist of a complete survey during the confirmed flowering period and a complete follow-up survey 3-4 weeks afterward. Two seasons are required because of potential low detectability during the first season and to account for possible phenological variability.

Survey Intensity: Suitable habitat must be surveyed by walking transects no more than 2 meters apart.

References:

Bell, M.M. 1980. California Native Plant Society Rare Plant Status Report: *Thelypodium stenopetalum* Wats. Unpublished report prepared for the California Native Plant Society. 4pp.

California Department of Fish and Game. 1998. RAREFIND. A computer database of the California Natural Diversity Database.

Krantz Biological Services. 1980. *Thelypodium stenopetalum*, the slender-petaled mustard: A Botanical Survey of the Species Throughout Its Range. Unpublished report prepared for the San Bernardino National Forest. 43 pp. + appendices.

USDA Forest Service. 2002. San Bernardino National Forest T/E plant species GIS data.

USDI Fish & Wildlife Service. 1998b. Recovery Plan for *Sidalcea pedata* and *Thelypodium stenopetalum*.

General Plant Report and Survey Requirements

General Guidelines For Surveyors, Assessments And Reporting To Accompany Suitable Habitat Criteria And Survey Protocols For Federally Listed Species Surveyor Qualifications:

The surveyor must be a professional biologist or botanist with recognized expertise in southern California species, demonstrated ability to identify the target species and habitat, and approved by the District or Forest Botanist or Biologist overseeing the survey. Field survey crews shall include at least one member who has seen the species in the field; other team members may be trained using photographs, drawings, and/or herbarium specimens.

Habitat Suitability Assessments and Criteria: Purpose, Determinations, and Guidance

The purpose of developing and using habitat suitability criteria for listed species is to increase our ability to predict whether habitat areas are likely to be occupied. The ultimate fate of the modeled habitat maps is to be replaced by an accurate and precise set of suitable habitat maps. This predictive ability will allow us to better evaluate the effects of ongoing forest activities, and potential effects of proposed projects and actions, in the contexts of NEPA and ESA.

Starting point for habitat assessments will be areas identified as "modeled habitat." For some criteria it will be possible to evaluate the habitat from the office, using aerial photographs or other available information. Other criteria will require field evaluation to verify whether modeled habitat is suitable. Once an area is determined to be suitable habitat, the Forest Service will either conduct species-specific protocol surveys for occupancy or assume that the project area is occupied.

Surveys to determine or infer absence will be conducted based on an estimate of the variability of expression and detectability of the species. Guidance is provided in this table:

Repeat Matrix

	High Detectability Recommended No. of Survey Seasons	Low Detectability Recommended No. of Survey Seasons
Low Variability	1	2
Moderate Var.	2	3
High Variability	3	4
Fire Followers	1	2

We recognize, just as the Service did in BO (1-6-00-F-773.2) the Effects of the Action Section, Service Assumptions, No. 6, "the modeled habitat data significantly overestimate the amount of habitat that is actually suitable and thus potentially occupied," the opposite may be true and may exclude some unknown areas of suitable and occupied habitat. Species specific suitable habitat criteria are developed between the Forest Service and Fish and Wildlife Service (Service) and must be met for the site to be considered suitable. Suitable habitat criteria may be used as needed to evaluate habitat outside of modeled habitat. An area will be identified as suitable habitat if suitable habitat criteria are within the general geographic range of modeled habitat.

Also, for NEPA evaluations, if ground is to be disturbed, it is routine or standard operating procedures for Forest Service biologists and botanists or approved contractors to visit proposed project sites to survey for rare plants and animals whether or not the habitat is key, occupied or modeled for federally listed species.

Many plants are often, not able to be surveyed, are undetectable, or are suppressed by vegetation. There is the possibility that landscapes affected by disturbances such as fire may become suitable for certain species, including federally listed species, and have appropriate conditions for additional assessments and surveys. When these opportunities occur, the Forest Service may survey these areas based on funding, opportunities, landscape conditions, and professional botanical opinion and advice.

Surveys of burned areas will occur as described in Chapter one - the proposed action, burned area monitoring section, of the province consultation package and subsequent biological opinion (1-6-00-F-773.2).

For plants, actual detectability should be assessed in the field using reference populations, and should be used instead of the generalized detectability profile in determining repeat requirements. Reference populations must be representative of the survey site being considered (i.e., an area with as similar as possible climatic conditions as inferred from elevation, slope, aspect and geographic position). One or more members of the field survey crew shall visit a known occurrence prior to initiating surveys to verify that precipitation has been adequate to stimulate the growth and to determine its phenology and detectability. Surveys shall be postponed if the species is not detected at known sites or if the plants are inconspicuous due to poor growth. Plants will be considered inconspicuous if none or few are flowering.

Under BO reporting requirements, "All relevant field survey data shall be submitted to the CDFG Natural Diversity Database and to the Service annually. Surveys and inventories conducted by Forest Service staff, contractors, outside groups for NEPA documents or special use purposes shall be gathered, summarized and reported to the Service."

1. Record relevant field data using: <http://www.dfg.ca.gov/whdab/natspec.pdf>
2. Include CNDDDB survey forms and/or occurrence forms for reference population.
3. Refer to the Service guidelines found at ventura.fws.gov/SurveyProt/Botanical_surv.htm
3. Map the following: areas of occupied habitat; unoccupied habitat that appears otherwise suitable; and unsuitable habitat. Record relevant data that supports habitat determinations of suitable and unsuitable.
4. Reporting requirements associated with a protocol survey include the following:
 - Survey dates and times

- Surveyor names and titles
- General description of location, including GPS readings (UTM coordinates), USGS Quad, and TRS
- General Observations, including weather, vegetation types overall phenology, etc.
- Detailed findings of survey
- Map of habitat and route surveyed, showing areas of suitable and unsuitable habitat
- Map showing occupied habitat (if any) or target species and other special-status species detected
- Detailed information on populations of T/E species
- Observed and/or potential threats or disturbances to the area
- Reference to herbarium collections, if any
- List of plants and wildlife observed
- Photo-documentation of habitat surveyed: A minimum of four representative color photographs of vegetation communities or the landscape; include photographs of species, food plants, and nectar sources detected.
- Photocopy of original field notes.
- CNDDDB field survey form for surveyed habitat and reference population.

Appendix D - Adaptive Mitigation Protocol for Recreation Sites

Recreation Implementation Guidelines

These management actions will be implemented in the order (education; perimeter control; management presence; redirection of use- if appropriate) listed below. The following actions and practices include, but are not limited to:

1. Conservation Education

- Use information networks, including public service announcements, internet sites and links, and visitor guides and newsletters to communicate information regarding TEPCS species and habitats.
- Install and maintain appropriate multi-lingual information boards, interpretive panels and regulatory signs at developed sites and dispersed areas within habitat for TEPCS species.
- Develop interpretive and environmental education programs for the public, Forest Service personnel, concessionaires, other special use permit holders, and volunteers about TEPCS species and habitats. Ensure that the methods chosen does not result in unacceptable effects to TEPCS species. Coordinate efforts between the four southern California National Forests for maximum results and cost efficiencies. Use existing visitor centers where appropriate.
- De-market the site or area and develop an information strategy to direct visitors to Forest recreation opportunities that do not affect TEPCS species or habitats.

2. Perimeter Control

- Modify visitor access to manage use. Install and maintain appropriate fencing or other barriers to protect TEPCS habitat areas. Limit the number of users at the site or area.
- Install and maintain appropriate multi-lingual informational, interpretive and regulatory signing in conjunction with perimeter controls to engage forest visitors with protection of TEPCS species at recreation sites and areas within TEPCS species habitat.

3. Presence

- Provide adequate management presence to ensure protection of TEPCS species. This presence could include Forest Service personnel, peer education, concessionaires, other permit holders, and volunteer support.

4. Direct Action

- Limit visitor use of recreation sites and areas through diurnal, seasonal or temporary closures during critical life cycle periods for affected TEPCS species.
- Where visitor use is allowed - Seek opportunities to proactively rehabilitate, design, reconstruct, rehabilitate and harden the site and/or locate new facilities and areas for redistributing human use away from TEPCS species and habitats.
- Where visitor use is restricted # a) Limit or control use at developed recreation sites and areas through permit system (e.g. group campgrounds); b) When other actions are ineffective, enact and enforce Forest Orders to protect habitat TEPCS habitat areas through use of seasonal or temporary closures of developed recreation sites and areas; c) Seek opportunities to proactively design and locate new facilities and areas for re-distributing human use away from TEPCS species and habitats.
- Where visitor use is prohibited - When seasonal or temporary closures are ineffective, enact and enforce Forest Orders to close recreation sites or areas. If monitoring and evaluation indicate that closure is ineffective, then take steps to decommission facilities and permanently discontinue visitor use.

Appendix E - Five-Step Screening Process

The *Five-Step Project Screening Process* described below is used to assist in ensuring that riparian conservation areas (RCAs) are recognized, emphasized and managed appropriately during project planning and implementation.

The standards for RCAs apply in these areas except in cases where the suitable uses of the overlapping land allocation place greater restrictions on management activities. For example, mechanized fuels treatments are allowed in riparian conservation areas (based on consistency with the riparian management objective). However, where a riparian conservation area overlaps with a wilderness area, treatments are limited to non-mechanized and non-motorized methods.

The management objective for riparian conservation areas is listed in Part 2 of the revised land management plan. The riparian management objective serves as a check for evaluating management prescriptions to determine if a proposed activity will move an area toward the riparian desired conditions (DC) described in Part 1 of the revised land management plan.

Activities are designed to protect, maintain, or restore the riparian ecosystem. In the riparian conservation areas next to perennial and intermittent streams, lakes, and wetlands, allow only those actions that maintain or improve long-term aquatic and riparian ecosystem health including quantity, quality, and timing of stream flows.

Five-Step Project Screening process:

Step 1:

Determine riparian conservation area width by stream type based on the following criteria:

Stream Type	Width Of The Riparian Conservation Area
Perennial Streams	100 meters (328 feet) on each side of the stream, measured from the bank full edge of the stream
Seasonally Flowing/Intermittent Streams	30 meters (98 feet) on each side of the stream, measured from the bank full edge of the stream
Streams In Inner Gorge (*)	Top of inner gorge
Special aquatic features (**) or perennial streams with riparian conditions extending more than 50 meters from edge of streambank, or seasonally flowing/intermittent streams with riparian conditions extending more than 10 meters from edge of streambank	100 meters (328 feet) from edge of feature or riparian vegetation, whichever width is greater
Other hydrological or topographic depressions without a defined channel (meadows, vernal pools)	RCA width and protection measures determined through project level analysis

(*) Inner gorge is defined by adjacent stream slopes greater than 70 percent gradient

(**) Special Aquatic Features include: lakes, reservoirs, ponds, wetlands, seeps, and springs

Step 2:

Use the environmental GIS layer, or e-layer, to determine additional protective RCA widths specific to individual or suites of species (e.g., arroyo toad has a topographical contour distance from water, etc.).

Step 3:

Screen new projects against the riparian desired condition (DC-WA-01), the imperiled species desired condition

(DC-IS-01), and recovery plans for federally listed riparian dependent species to determine if the proposal is either neutral or will move the area closer towards the desired conditions. If it does, then proceed to Step 4. If it does not, then there is a need to either modify the project proposal, deny the proposal or complete a project-driven land management plan amendment.

Step 4:

Screen new projects against the revised land management plan riparian management objective (WAT-01) to determine the type and level of allowable management activities within RCAs. As part of the analysis consider physical factors, such as soil characteristics, ground water and surface water characteristics, geology and geologic hazards, slope, and stream characteristics; and biological factors, such as aquatic and riparian dependent species present, their habitat needs, and the ability of the existing environment to provide needed habitat.

Step 5:

Refer to *DRAFT Forest Service Handbook - Forest Supplement (FSH 2509.22)* in the land management plan appendices for specific guidance about management tactics to apply when conducting activities within RCAs.

Note: Modification of specific RCA widths for individual projects is possible if a need is identified during the interdisciplinary team (IDT) process; an earth scientist or biologist has participated in the proposed change; and it has become part of the proposed action for Line Officer approval. Use a peer review process for vegetation treatments or other activities proposed within an RCA that are likely to significantly affect riparian or aquatic resources.

Appendix F - Guidelines for Aerial Application of Retardants and Foams in Aquatic Environments

File Code: 5160

Date: April 20, 2000

Route To:

Subject: Guidelines for Aerial Application of Retardants and Foams in Aquatic Environments

To: Regional Foresters and Area Director

Enclosed are revised guidelines for aerial delivery of retardant and foams which are to be implemented immediately. These guidelines will be effective until we complete additional field studies which will allow us to amend and refine the guidelines. With these guidelines in place, we were able to issue a Resume Work Order to FIRE-TROL Holdings, LLC.

In addition to these guidelines, we have committed to undertake two interagency studies which will start this field season. One will address the residual effects of the retardant on the forest environment and will look at areas where retardant was dropped during the 1999 fire season. The other study will look at the applicability of the laboratory results of the Columbia Environmental Research Center as recommended in their report. It is anticipated, with the results of these two studies, that we will be able to develop additional guidelines which will be acceptable to all agencies for emergency fire response.

Background information on this issue can be found on the web at: www.fs.fed.us/fire/.

If there are questions regarding these guidelines, please contact your forest or regional fire staff.

/s/ Phil Janik

PHIL JANIK

Chief Operating Officer

Guidelines for Aerial Application of Retardants and Foams in Aquatic Environments

Guidelines for Aerial Delivery of Retardant or Foam near Waterways

Definition:

WATERWAY # Any body of water including lakes, rivers, streams and ponds whether or not they contain aquatic life.

Guidelines:

Avoid aerial application of retardant or foam within 300 feet of waterways.

These guidelines do not require the helicopter or airtanker pilot-in-command to fly in such a way as to endanger his or her aircraft, other aircraft, or structures or compromise ground personnel safety.

Guidance for pilots: To meet the 300-foot buffer zone guideline, implement the following:

Medium/Heavy Airtankers: When approaching a waterway visible to the pilot, the pilot shall terminate the application of retardant approximately 300 feet before reaching the waterway. When flying over a waterway, pilots shall wait one second after crossing the far bank or shore of a waterway before applying retardant. Pilots shall make adjustments for airspeed and ambient conditions such as wind to avoid the application of retardant within the 300-foot buffer zone.

Single Engine Airtankers: When approaching a waterway visible to the pilot, the pilot shall terminate application of retardant or foam approximately 300 feet before reaching the waterway. When flying over a waterway, the pilot shall not begin application of foam or retardant until 300 feet after crossing the far bank or shore. The pilot shall make adjustments for airspeed and ambient conditions such as wind to avoid the application of retardant within the 300-foot buffer zone.

Helicopters: When approaching a waterway visible to the pilot, the pilot shall terminate the application of retardant or foams 300 feet before reaching the waterway. When flying over a waterway, pilots shall wait five seconds after crossing the far bank or shore before applying the retardant or foam. Pilots shall make adjustments for airspeed and ambient conditions such as wind to avoid the application of retardant or foam within the 300-foot buffer zone.

Exceptions:

When alternative line construction tactics are not available due to terrain constraints, congested area, life and property concerns or lack of ground personnel, it is acceptable to anchor the foam or retardant application to the waterway. When anchoring a retardant or foam line to a waterway, use the most accurate method of delivery in order to minimize placement of retardant or foam in the waterway (e.g., a helicopter rather than a heavy airtanker).

Deviations from these guidelines are acceptable when life or property is threatened and the use of retardant or foam can be reasonably expected to alleviate the threat.

When potential damage to natural resources outweighs possible loss of aquatic life, the unit administrator may approve a deviation from these guidelines.

Threatened and Endangered (T&E) Species:

The following provisions are guidance for complying with the emergency section 7 consultation procedures of the ESA with respect to aquatic species. These provisions do not alter or diminish an action agency's responsibilities under the ESA.

1. Where aquatic T&E species or their habitats are potentially affected by aerial application of retardant or foam, the following additional procedures apply:

As soon as practicable after the aerial application of retardant or foam near waterways, determine whether the aerial application has caused any adverse effects to a T&E species or their habitat. This can be accomplished by the following:

Aerial application of retardant or foam outside 300 ft of a waterway is presumed to avoid adverse effects to aquatic species and no further consultation for aquatic species is necessary.

Aerial application of retardant or foam within 300 ft of a waterway requires that the unit administrator determine whether there have been any adverse effects to T&E species within the waterway.

These procedures shall be documented in the initial or subsequent fire reports.

2. If there were no adverse effects to aquatic T&E species or their habitats, there is no additional requirement to consult on aquatic species with Fish and Wildlife Service (FWS) or National Marine Fisheries Service (NMFS).

3. If the action agency determines that there were adverse effects on T&E species or their habitats then the action agency must consult with FWS and NMFS, as required by 50 CFR 402.05 (Emergencies). Procedures for emergency consultation are described in the Interagency Consultation Handbook, Chapter 8 (March, 1998). In the case of a long duration incident, emergency consultation should be initiated as soon as practical during the event. Otherwise, post-event consultation is appropriate. The initiation of the consultation is the responsibility of the unit administrator.

Each agency will be responsible for insuring that the appropriate guides and training manuals reflect these guidelines.

Appendix G - DRAFT - Guidelines for Construction, Maintenance and Operation of Mountain Top Communications Sites

Draft Guidelines for Construction, Maintenance and Operations Of Mountain Top Communications Sites, U.S.D.A. # Forest Service # Southern Province

The Southern Province of the Forest Service (Province) is comprised of the Angeles, Cleveland, Los Padres and San Bernardino National Forests. One of the major programs administered by these forests covers the issuance and administration of Special Use Permits for communication sites which have been officially designated in the land management plans of the respective forests. The following guidelines have been developed and adopted by the Province in keeping with the protection and conservation of bird species covered by the Migratory Bird Treaty Act and/or Endangered Species Act of 1973, as amended.

I : Guidelines for Communication Tower Siting, Construction, Operation, Maintenance and Decommissioning

Any company/applicant/licensee proposing to construct a new communications tower/structure should collocate the communications equipment on an existing communication tower or other structure (*e.g.*, fire lookout, water tower, or building mount) when technically feasible. Depending on tower load factors and proposed use needs, up to 10 providers may collocate on an existing tower.

If co-location is not feasible and a new tower or towers need to be constructed, communications service providers should construct towers of the same or lesser tower height as existing towers at the proposed site and no more than 199 feet above ground level (AGL), using construction techniques which do not require guy wires (*e.g.*, use a lattice structure, monopole, etc.). Such towers should be unlighted if Federal Aviation Administration regulations permit.

If constructing multiple towers, environmental analysis shall consider the cumulative impacts of all of those towers to migratory birds and threatened and endangered species as well as the impacts of each individual tower.

If at all possible, new towers should be sited within existing "antenna farms" (clusters of towers) within existing designated communication sites. Towers should not be sited in or near wetlands, other known bird concentration areas (*e.g.*, state or Federal refuges, staging areas, rookeries, reintroduction sites), in known migratory or daily movement flyways, or in habitat of threatened or endangered species. Towers should not be sited in areas with a high incidence of fog, mist, and low ceilings.

If taller (>199 feet AGL) towers requiring lights for aviation safety must be constructed, the minimum amount of pilot warning and obstruction avoidance lighting required by the FAA should be used. Unless otherwise required by the FAA, only white (preferable) or red strobe lights should be used at night, and these should be the minimum number, minimum intensity, and minimum number of flashes per minute (longest duration between flashes) allowable by the FAA. The use of solid red or pulsating red warning lights at night should be avoided. Current research indicates that solid or pulsating (beacon) red lights attract night-migrating birds at a much higher rate than white strobe lights. Red strobe lights have not yet been studied.

Tower designs using guy wires for support which are proposed to be located in known raptor or waterbird concentration areas or daily movement routes, or in major diurnal migratory bird movement routes or stopover sites, should have daytime visual markers on the wires to prevent collisions by these diurnally moving species. Spacing of markers should be at 10 foot intervals for smaller "tags" and at 20 foot intervals for larger more linear "flight diverter" structures.

Towers and appendant facilities should be sited, designed and constructed so as to avoid or minimize habitat loss within and adjacent to the tower "footprint." However, a larger tower footprint is preferable to the use of guy wires in construction. Road access and fencing should be minimized to reduce or prevent habitat fragmentation

and disturbance, and to reduce above ground obstacles to birds in flight.

If significant numbers of breeding, feeding, or roosting birds are known to habitually use the proposed tower construction area, relocation to an alternate site is required unless adequate justification can be provided to satisfy regulatory agency needs. If this is not an option, seasonal restrictions on construction may be required in order to avoid disturbance during periods of high bird activity.

In order to reduce the number of towers needed in the future, providers are encouraged to design new towers structurally and electrically to accommodate the applicant/licensee's antennas and comparable antennas for at least two additional users (minimum of three users for each tower structure), unless this design would require the addition of lights or guy wires to an otherwise unlighted and/or unguyed tower.

Security lighting for on-ground facilities and equipment should be down-shielded to keep light within the boundaries of the site.

If a tower is constructed or proposed for construction, Service personnel or researchers from the Communication Tower Working Group should be allowed access to the site to evaluate bird use, conduct dead-bird searches, to place net catchments below the towers but above the ground, and to place radar, Global Positioning System, infrared, thermal imagery, and acoustical monitoring equipment as necessary to assess and verify bird movements and to gain information on the impacts of various tower sizes, configurations, and lighting systems.

Towers no longer in use or determined to be obsolete should be removed within 12 months of cessation of use.

II: Additional Guidelines for Other Structures Associated with Communication Towers and Sites

Place anti-perching materials along the top of open horizontal surfaces at tower tops or protruding arms of other tall vertical structures.

Place anti-perching materials or devices along the top edge of flat roof tops or roof ridges of equipment buildings or other similar structures located within the communication site.

Cover all microwave dishes with radome covers and place anti-perching materials or devices along the top quarter-arch of the front edge of dishes capable of supporting a perching condor (approximately 20 pounds per bird).

Place anti-perching materials or devices along the top surface of horizontal coverings or tracks holding wave-guides capable of supporting a condor.

Keep all trash, garbage or excess scrap materials removed from the communication site, or placed in enclosed structures not accessible to condors or other large bird species.

Secure all loose wires or netting to prevent accidental entrapment of large birds. Placement of wires in conduit is also recommended where feasible.

Cover or otherwise protect external fiberglass type insulation or other soft materials which could be ripped apart or ingested by condors or other large birds.

Cover all spill retention or catchment basins or other open structures that may collect and hold water or other liquids which condors or other birds may attempt to drink.

Cover or screen all large drains, conduits or other similar openings which are large enough for a condor to walk into to prevent potential entrapment.

All doors and windows on buildings or other structures shall be designed to ensure they remain closed when not occupied by personnel to prevent accidental entry and entrapment of condors or other species.

Cyclone type fencing or other similar security fencing or walls surrounding equipment or other structures should be designed and located to avoid the potential for accidental entrapment of condors or eagles.

Place raptor guards or other anti-perching materials or devices along the upper surface of the horizontal cross arms of electrical power poles which could serve as perches for larger birds.

For guidance on markers and other anti-perching devices, see *Avian Power Line Interaction Committee (APLIC). 1994. Mitigating Bird Collisions with Power Lines: The State of the Art in 1994. Edison Electric Institute, Washington, D.C., 78 pp*, and *Avian Power Line Interaction Committee (APLIC). 1996. Suggested Practices for Raptor Protection on Power Lines. Edison Electric Institute/Raptor Research Foundation, Washington, D.C., 128*

pp. Copies can be obtained via the Internet at <http://www.eei.org/resources/pubcat/enviro/>, or by calling 1-800/334-5453).

Appendix H - Species Guidance Summary

Habitat accounts were developed for alpine, subalpine, chaparral, coastal sage scrub, desert montane, desert scrub, gabbro outcrops, lakes/reservoirs, limestone/carbonate outcrops, lower montane forest, montane forest, montane conifer forest, montane meadows, Monterey coastal, oak woodland, savanna, grassland, pebble plain, riparian, serpentine outcrops and vernal pool habitats. The contents include a description, distribution, abundance, ecological processes, factors influencing ecological processes, and management considerations for each habitat. Species accounts were written for 196 animals (14 amphibians, 72 birds, 11 fish, 30 invertebrates, 46 mammals, 23 reptiles) and 286 plants. Contents of each species account included as appropriate the federal or state status, distribution and known occurrences, systematics, habitat requirements, reproduction, activity, dispersal, migration, diet and foraging, territoriality/home range, predator-prey relationships, inter and intraspecific interactions, population status and trends, and conservation considerations. A literature review was conducted for the species and habitat selected for evaluation. The primary reference to start from was the Southern California Mountains and Foothills Assessment. The information gathering process included collecting available published information on the species' biology and ecology by conducting scientific literature review. We were not trying to create complete treatises on the natural history of each species. Species experts were contacted informally to provide literature sources or offer expert opinions in completion of some information items.

Appendix I - Land Acquisition Criteria

Priority 1 Acquisitions (not listed in any order of priority):

- Land and associated riparian ecosystems on water frontage such as lakes, streams, and vernal pools.
- Critical habitat lands needed for the protection of federally listed endangered or threatened fish, wildlife, or plant species.
- Land needed for the protection of significant historical or cultural resources, when these resources are currently threatened but may be better protected by public ownership.
- Land that enhance recreation opportunities, public access, and protection of aesthetic values.
- Land needed for protection and management of administrative and Congressionally designated areas.
- Land identified as landscape linkages or wildlife corridors.
- Land needed to enhance or protect watershed improvements that affect the management of National Forest or Grassland riparian areas.
- Environmentally sensitive land such as wetlands and old growth.
- Water rights needed to protect water or wildlife habitat.
- Buffer land needed for protection of lands acquired for specific purposes listed above.

Priority 2 Acquisitions (not listed in any order of priority):

- Key tracts of an ecosystem that are not urgently needed, but will promote more effective management of the ecosystem and will meet specific needs for vegetative management, valuable watershed management, research, public recreation or other defined management objectives.
- Land or interest in land that protect Pacific Crest National Scenic Trail values and provide an unbroken public right-of-way for the trail, consistent with the current policy statement for acquisition.
- Land needed to protect resource values by eliminating or reducing fire risks, soil erosion, and occupancy trespass.
- Land needed to reduce expenses of both the Forest Service and the public.

Priority 3 Acquisitions:

Access

- Access should be acquired or exchanged with other agencies, States, counties, and private interests to assure management objectives are met for all ownerships.

Appendix J - Livestock Capability and Suitability Criteria

The determination of rangeland suitability is a two-step process. The first step is the determination of those lands that are capable of being grazed. Rangeland capability represents the biophysical determination of those areas of land that can sustain domestic grazing. Capability depends on current resource and site conditions.

Step 1: Determine the capability of the total acres on the forest for livestock grazing. A unit of National Forest System land is capable where:

- Slopes < 60%
- Ability to produce > 200 lbs/acre of forage
- Accessible to livestock
- Areas where livestock can be controlled or sustained within a designated area and management system

On the four southern California National Forests, capable rangeland requires approximately 1-11 acres, depending on vegetation type and other physical factors, such as slope and aspect, to produce 1 Animal Unit Month (AUM). One cow on range for a month represents 1 AUM and a cow/calf represents 1.32 AUM. Based on historical and current use there are approximately 4 acres per AUM on capable lands. Livestock grazing is predominantly distributed among the following capable vegetation categories for the four southern forests. The primary palatable forage for livestock is annual herbaceous vegetation with a smaller amount of browse on woody species. Using existing vegetation from the GIS database, the Calveg vegetation types for all designated grazing areas were grouped into 7 broader vegetation categories based on estimated potential capability and forage production similarities where: 1=Herbaceous; 2=Hardwoods; 3=Conifer; 4=Chaparral/Coastal Sage Scrub; 5=Riparian; 6=Desert; 7=Non-capable

Step 2: Identifies which of those capable lands are suitable for grazing under various management scenarios or land use zones. Assessment of suitability is conducted to address whether livestock grazing is compatible with other land uses, resource values, social and economic values. Determine the suitability of capable lands by applying the following criteria. Capable lands are not suitable in the following land use zones and areas:

- Critical Biological Land Use Zone
- Experimental Forest
- Bighorn Sheep Habitat
- Critical Habitat for CAGN (California Gnatcatcher)
- Specially designated National Forest System land excluded from grazing by legislation, such as the Agua Tibia Wilderness (Cleveland National Forest).
- For vacant grazing areas where capable lands may not be suitable depending on the overall evaluation of potential effects and opportunities to mitigate adverse effects based on site-specific information or analysis.
- Areas with significant social conflicts, developed recreation sites, special use sites, heritage resource sites, Native American site and traditional practices, mining, and other authorized uses.
- Areas with administrative sites and research facilities or study sites except in areas where livestock grazing is for research purposes.
- Areas where livestock grazing is impractical due to economic considerations (e.g., high agency administrative cost in support of a small number of head, inability to control or sustain livestock without

costly investment to meet resource objectives and desired conditions.

- Key wildlife habitat areas where suitable habitat cannot be sustained (e.g., threatened, endangered, proposed, candidate, and sensitive species).
- Areas where ground cover (i.e., vegetation, litter, and rock greater than ¼ inch is insufficient to protect soil from erosion. The minimum percentage cover is 50% unless local data is available for use in setting more specific ground cover requirements).
- Areas with noxious weed infestations where livestock use could impede noxious and invasive weed control objectives. Exceptions could be where livestock are used as a tool for noxious and invasive weed control.
- Areas with unique habitats where suitable habitat cannot be maintained (e.g., bogs, fens, vernal pools, and rare plant communities).
- Areas where existing condition, or restoration needs require rest from grazing (i.e., watershed improvement projects). Exceptions could be where livestock grazing is needed to achieve desired vegetation management objectives (e.g., fuelbreak maintenance).
- Areas where landslide and/or soil erosion would be significantly increased due to compaction, concentration of water along livestock trails, removal of groundcover, or other alteration of surface and subsurface conditions on unstable geologic types and/or highly erosive soils.